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Monthly MEDICAL RECORD for the Duration

As an aid to the war effort and in order to conserve paper, from this issue on for the duration, the MEDICAL RECORD will appear monthly. Our readers will not suffer for we shall publish only those papers which we feel will be of real value to the physician. Papers will be shortened, and they may appear somewhat terse, but our readers will get the valid information they require. Into the monthly issues will be crowded all the essential material which appeared in the Journal twice monthly. Our advertisers will benefit, as we shall be enabled by this move to avoid raising rates for the time being.

Similar moves have been made by the British publications. They have requested their contributors to be brief and not indulge in needless rhetoric and redundance. We make the same request.

We must win this war as quickly as possible. It is an all out war, and the sooner everyone realizes this, the sooner we shall have victory. We ask that our readers, contributors, and advertisers cooperate in what we consider to be a constructive and worthy effort.

G. STRAGNELL, M.D.
Editor

Medical Experience at Pearl Harbor and Bataan

The unexpected attack on Pearl Harbor on December 7th gave the medical units stationed there a unique opportunity to prove their efficiency. The challenge was met in a highly satisfactory way, as we have learned from several sources. The report of Captain Reynolds Hayden, of the Navy's Medical Corps, presents some striking details. Captain Hayden was in command of the Naval Hospital at Pearl Harbor the day of the attack.

Soon after the start of the attack casualties began coming in at a rate of several a minute. Only the most seriously wounded could be sent immediately to the operating rooms. Captain Hayden said the long-established belief that six hours was the time limit for successful treatment of massive lacerated wounds was exploded by use of sulfanilamide. His experience, he said, gained through necessity, demonstrated that the free local use of sulfanilamide powder in wounds permitted selecting the best time to operate.

Patients with massive, lacerated wounds, sometimes complicated by severe compound fractures, and which had received only the barest essentials of preliminary surgery plus sulfanilamide powder freely in the wound, were operated upon the second or third day after injury with excellent results. One of the important lessons of the attack, Captain Hayden pointed out, was that clothing offered considerable protection against flash burns from the explosion of large bombs. Men fully clothed often escaped with only face and hand burns, while companions without undershirts had severe chest and back burns.

Most of the deaths in the hospital occurred within twenty-four hours and were due either to acute or delayed shock. The great importance of the prompt treatment of shock was impressed on every one. Captain Hayden said that as first treatment all patients were given a hypodermic injection of one-half grain of morphine sulphate, followed by tetanus antitoxin. Special doctors and nurses were assigned to administer this treatment to patients immediately after admission.

Orr's technique, the encasement of severely wounded extremities in plaster so they were completely immobilized, was found especially valuable. It promoted healing as well as making the patient available for transportation. Captain Hayden said that if the cast was applied at the nearest first aid station, the patient could be transported free from pain to a hospital where more adequate treatment could be given.

Some new information on the emergency hospitals on Bataan was given in a report published in *Life*. The soil of Bataan is rich in the anaerobic bacteria that causes gangrene in wounds. In the first world war gangrene was treated by Dakin's solution and amputation—with doubtful results. Since then a serum has been discovered, but the doctors on Bataan ran out of the serum. Lieutenant Colonel Frank Adamo, a reserve doctor from Florida, tried slicing the wound wide open, excavating all infected tissue, swabbing with

peroxide and letting oxygen get in to kill the bacteria. This technique proved highly successful.

Another principle of Army medicine in Bataan was to let the patient alone as much as possible. Doctors stopped hemorrhages, put sulfanilamide powder in the wound, administered antitetanus serum and let the patient's own body combat the blow. Operating was considered undesirable until the shock had passed off.

In one of Bataan's two hospitals there were nine hundred men, and in the other over three thousand patients were in tents. During one twenty-four hour period there were 470 admissions, and 420 operations by six doctors. The first hospital was bombed twice, and during the second bombing more than one hundred persons were killed or wounded.

Rockefeller Foundation in War

"Our modern inventions, in bringing the populations of the world closer together, have brought their diseases closer together too."

This was a conclusion in the report of the Rockefeller Foundation concerning the past year, made public by Raymond B. Fosdick, president of the foundation. Appropriations by the foundation during the year totaled $9,313,964; they were distributed mainly in six fields: public health, medical sciences, natural sciences, social sciences, humanities, and program in China. Of the money spent, seventy-four percent was for work in the United States.

The war has radically affected the activities of the foundation abroad. In June, 1940, the foundation's Paris office was closed, and the Lisbon office was closed in July, 1941. There are now no foundation representatives on the Continent of Europe, but an office is being maintained in London. Late in 1940 the Far Eastern office of the foundation was moved from Shanghai to Manila. At the time of the capture of Manila the head of the office, Dr. M. C. Balfour, was in Kunming. Unfortunately, his associate, Dr. Charles N. Leach, and some of the personnel of the Peiping Union Medical College, who were on their way to the United States, were in Manila when the city fell. The Peiping Union Medical College was closed by the Japanese authorities early in 1942, and the leading members of the staff were interned.

Mr. Fosdick said that at the request of the Army and Navy the foundation would supply several million additional doses of yellow fever vaccine in 1942. The report also described the foundation's activities as part of its war work in combating malaria, typhus and influenza. The wiping out of the malaria-carrying gambiæ mosquito in Brazil, after the expenditure of more than two million dollars and the work by an army of two thousand trained workers, was described in the report. This mosquito, which had caused a serious malaria epidemic in Brazil, had got into that country from Africa on airplanes or fast Navy destroyers. That epidemic may have been started by a single fertilized male, and illustrates the dangers involved when disease-carrying insects get free rides on airplanes or ships. Malaria studies are being made in Trinidad and Burma.

A vaccine prepared from the virus of both influenza A and B is now undergoing field tests on human beings, the report said. The danger of a world-wide epidemic of typhus is mentioned.

Population Increase

During each year of the last decade, the United States has had an increase of about one million persons, resulting from the excess of births over deaths. It seems, consequently, that the population is increasing fairly rapidly, and that the current excess of births over deaths is sufficient to assure our continued increase in future years.

Such a supposition is, however, far from being warranted, as may be seen from new statistics published by the Metropolitan Life Insurance Company. It is important to observe the fertility rates which prevail, and to see whether these are sufficient to balance the mortality rates. Fertility rates may be measured by the number of daughters born annually to a thousand women within a specified age group and these rates have been going down steadily in America during the last twenty years or more.

The ratio of the number of daughters to the number of females starting out together from birth in the generation is known as the "net reproduction rate". For the white population of the United States in 1940 the net reproduction rate figures out to 1.024, so it can be said that conditions of fertility and mortality were such as to lead to a population increase of 2.4 percent per generation of about twenty-eight years. The fertility and mortality of 1930 gave a net reproduction rate of 1.079, and with the conditions of 1920, the figure was 1.252. Thus, within two decades, this "true" measure of our population growth has fallen from an ample margin until it is now only a little above the level required for a stationary population.

For 1941 we have at present only provisional data, which indicate that the true rate of natural increase for that year will be about 2.8 per 1,000—practically identical with that for 1930. There are certain points which show, according to the Metropolitan Life's estimate, that we are probably headed toward a stationary population and perhaps even to a declining one. With a large element of our able-bodied men in the armed services—and the consequent disruptions of family life and postponements of marriage—the effective fertility of the American people is likely to fall below the level required to maintain a stationary population.

Papers and Addresses

THE CANCER PROBLEM—PROGRESS IN ITS SOLUTION*

WILLIAM SEAMAN BAINBRIDGE
New York, N. Y.

The subject for my brief talk today was selected by your distinguished president, Dr. Vicente Pena. Time will not permit me to cover much that I should like to discuss. However, I shall point out certain phases of the problem, which I hope will prove interesting and profitable to consider.

Let us admit the realities in our subject—face the status quo as of today. The cancer problem is not solved. Thousands of research workers in laboratory and clinical centers throughout the world are exerting every effort in this work, millions of dollars are being spent by states, nations, foundations and special hospitals for malignant diseases, and new centers are coming into being. Your own Cancer Hospital where I saw many cases this morning and noted the work that is being done under Dr. Landaeta Sojo, is one of these progressive institutions.

There is no need for the profession or the laity to take a hopeless attitude. We admit that cancer is statistically on the increase—yet it is not really so. It has been proved that the disease is not infectious or contagious. As to heredity, the insurance companies of the United States of North America do not even take it into consideration when computing premium rates. Maud Slye, who has performed such painstaking experimentation on mice from the viewpoint of heredity, now has abandoned her former position with regard to the simple and definite nature of heredity in mouse cancer. Her former claims have also been negatived by other research centers.

We are making headway in educating the people to disassociate the thought of cancer from a loathsome disease, and to come early for examination while there is a chance of preventing malignancy or obtaining a real cure. Still, the rate of deaths has not been materially influenced: one out of every seven women and one out of every eleven men over forty years of age die of, die with, or have had cancer and were cured of it. I am an optimist but also a pragmatist in this as in other fields.

Let us face certain other facts before reverting to the brighter side of the picture. Today our profession is divided on many important matters concerning cancer—its cause and its treatment. There are some, like Pierre Delbet, who believe that cancer is largely a deficiency disease. He prescribes certain salts as a preventive or to reduce the possibility of return of malignancy after operation.

It is of interest that about eighty-five years ago, in the Valley of the Schelde in Belgium, there was a famous doctor who, no matter what else he prescribed for the various ailments for which he was consulted, insisted that his patients who were over thirty-five years of age lick with their tongue two or three times a day a certain composite salt he had specially prepared, followed each time by the intake of a half glass of water. He maintained that this was essential to their health, prolonged life, and warded off or delayed the diseases of older years. When we had our great World Fair in New York two years ago, I visited the Borden Milk Company Exhibit and was particularly interested in their scientific care of the cows. Here, to my amazement, I found that it is the practice to give each cow a special form of salts to lick several times a day in order that they stay healthy and give the best possible milk. The composite salt is the same, I am told, as that which the Belgian physician gave his patients and Delbet prescribes and takes himself.

Roffo and his school of thought hold to the irritation theory. They believe that strong sunlight, the constant application of tar on the skin, and the smoking of tobacco with the heated nicotine passing through the cigar holder or direct from cigarette or cigar on to the lip, all are causes of cancer. They also affirm that oil from the particles of dust floating in the city air causes lung cancer, and that the eating of the yolk of eggs, cooked fats, liver, and brains causes cancer development by irritation of the body cells through substances added to the blood and lymph. Other schools of thought question and largely disagree with the validity of the dietetic side of this theory.

In your midst you have an outstanding research worker, Rincones, who is proceeding on the theory that body growth depends upon a hormone; that there is another hormone which, at a certain time, retards growth and that when this latter does not function properly, growth becomes riotous and allows for cancer development. Thus, here among you, is the enterprising spirit of discovery reminiscent of the early days when Columbus crossed the seas! We will watch his further studies with great interest.

There are those who believe in radium and extol this agent as a great boon—*the* treatment for malignancy. Others, quite as experienced in the treatment of cancer, wish radium had never been discovered. One of our great physiologists believes the world would be better off if all radium were buried in the earth and forgotten! Another scientist is convinced that both radium and x rays are dangerous and that in a few years they will be totally abandoned. There are those who condemn x rays, others who place it ahead of radium; some, like Professor Roffo, of Buenos Aires, say radiation for even uterine cancer must be deep x rays, never light x rays, and rarely radium. At the Memorial Hospital in New

*Lecture delivered before the National Academy of Medicine of Venezuela, Caracas, October 24, 1941, while in Venezuela on an official mission for the United States Government which took the author to all the republics of Central and South America and the important islands of the Caribbean.

York, Adair, who for years urged preoperative and postoperative x ray treatment in breast cancer, now strongly advises against its use before operation and only on selected cases after surgery. Both Babcock and Roman of Philadelphia are opposed to radiation except in hopeless cases.

My own personal experience, and I speak now as but one individual who, with you, is groping toward the light, leads me to the belief that surgery gives more hope for the victim of cancer than other means known today. Of course in inoperable, irremovable cancer, radium, x rays, destruction by cauterization of any kind, or what you will, can be utilized. Recently I pubished a paper in which I give certain statistics from my files of private cases of breast cancer. Out of 223 unselected cases there were 150 where adequate, radical surgery, without resort to any other adjuvants, was the only treatment. Out of these 150 cases, fifty-one patients lived from five to thirty-six years—thirty-four percent; nineteen lived from five to ten years; twenty-two from ten to twenty years; eight from twenty to thirty years; one lived thirty-one years, and one thirty-six years. At the time the article was published thirty-five of these patients were still alive, and free of the disease. Again and again I have stressed the importance to students, physicians and surgeons, of care on examination and at operation, so that there may be no spreading of the cancer cells by rough and faulty handling. A patient's doom may be sealed, if the utmost care is not taken, at the very moment of examination, or during operation.

I have now in process of preparation statistics on a series of my patients who have suffered from cancer at other sites of the body, on which I performed operation and where neither x ray nor radium was used, and these will afford interesting comparative study.

At the present time, in the treatment of malignancy, I am working along several lines in addition to surgical removal:

1. The hormone therapy—experimenting on the use of the opposite hormone: male ampacoids for women; female ampacoids for men.

2. Alkaline status, as many of these cases have a marked acid condition.

3. Cutting nerves to relieve pain in irremovable cancer.

4. Shutting off the blood supply to the cancer mass in order to shrink the growth.

5. Relieving and removing as far as possible any internal irritation.

I mention the foregoing as a few examples—there are many others that could be cited—of the difference of opinion in our profession. Since we ask the laity to come to us for treatment and advice, we must, as speedily as possible, come to some agreement on essentials and leave it to the groups of eminent research workers and scientific bodies like this Academy to pool the evidence and standardize their results for practical use. If proof is not absolute along certain lines, then these must be returned again to the field of the undetermined for further research and comparative study.

In order to face the future more clearly it may be well to turn to the past for a few moments. We all know that in centuries gone by the term cancer was very loosely applied. In fact, it has been only during the past few hundred years that leprosy, tuberculosis, elephantiasis, venereal disease, granuloma, actinomycosis, blastomycosis, chronic bone disease, and fatty tumors, have been differentiated from the cancer mass and treated as separate entities. In the twentieth century—and we are now nearing the half-way point—despite all the efforts and money being put forth all over the world, only Hodgkin's disease has, to date, been removed from what we still call cancer.

Does not the future have in store for us great hope? Does it not seem likely to you as it does to me that the cancer of 1941 will not be the cancer of years hence? As soon as we can clearly face this point, we will throw aside the idea of one cause and one cure in cancer, and begin to realize that there are many possibilities of numbers of causes and numbers of diseases in present day malignancy, though some of which may, indeed, seem to have the same family strain. As in the past let us divide further what we call cancer into separate entities and thus, by gradually shrinking the cancer mass, we will be sooner able to arrive at a solution of the cancer problem.

You see, I am sure, what I am trying to emphasize. Our many laboratory and clinical workers who feel they have discovered something in the line of a solution may be quite right, even though there are others who discount the claims. It is because each is finding out something in regard to this still enormous problem, in a direction that another has not traversed. Much of the answer may lie in our inability up to the present time, to read correctly and interpret aright all the facts—pro and con—that are placed before us. If we could but do this we can hardly envision what handicaps would be removed, and the great progress that might be ours.

It is my belief that: 1. Cancer should still be considered of multiplex pathology. 2. Research should be stimulated. 3. The groups best able to do so should collect well authenticated data and present the practical results to guide us in dealing with poor suffering humanity. 4. Human "garaging" should be promoted. 5. Hope and not fear should be mirrored to the patient. 6. Much can be done to prevent, much to cure malignancy, and much to relieve suffering by surgery and other agents even in the hopeless cases.

To the public let us present a united front. Can we say more today than the following?

1. That the hereditary and congenital nature of cancer are subjects which require much more study before any definite conclusions concerning them can be formed. Some claim that a cancerous predisposition may be congenital without being hereditary. However, in the light of our present knowledge, the question of the hereditary or congenital nature of cancer holds no element of alarm and should not be considered by the public.

2. That the contagiousness or infectiousness of cancer has not been proved. All who have studied the problem and have had clinical experience of the disease will agree that the conclusion may be drawn that nothing in the incidence of cancer points to its infectious nature. This being so, the public need have no concern regarding this phase of the question.

3. That the communication of cancer from man to man is so rare, if it really occurs at all, that it may be practically disregarded.

4. That those members of the public in charge of

or in contact with sufferers from cancer, with external manifestations or discharges of any kind, need at most take the same precautionary measures as would be adopted in the care of any ulcer or open septic wound.

5. That in the care of patients with cancer there is much less danger to the attendant from any possible acquirements of cancer, than there is of septic infection or blood poisoning from pus organisms.

6. That in cancer, as in all other diseases, attention to diet, exercise and proper hygienic surroundings is of distinct value.

7. That the vast majority of authorities hold that cancer is local in origin, but it is only fair to say that there are a number, which seems to be increasing, who are of the opinion that cancer is partly a constitutional disease. It is probable that more than one factor enters into the origin and development of cancer. In fact many agree with the author that cancer is not one, but a group of diseases.

8. That when accessible it may, in its incipiency, be removed so completely that chances are largely in favor of its nonrecurrence. Radium has been successful in the treatment of cancer in several sites of the body, and of x rays, the same may be said, while combined x ray and radium treatment or deep x ray has strong advocates. Electrosurgery is recommended by others. But it may be reiterated that surgery, with its improved technique, is still the sheet-anchor of treatment.

9. That when once it has advanced beyond the stage of cure, suffering in many cases may be palliated and life prolonged by surgery, radium or x ray treatment in suitable cases, or even by other means.

10. That among the advances in the treatment of cancer, there have been distinct improvements in the field of surgery, as well as in that of heat and radiation —x rays and radium; with these improved methods alone or in combination, much more may be offered of hope for cure, relief or palliation, than ever before.

11. That there is strong reason to believe that the individual risk of cancer can be diminished by the eradication, where such exist, of certain conditions which have come to be regarded as predisposing factors in its production.

12. That some occupations, notably working in pitch, oil, tar, paraffin, aniline, or soot, and with x rays or radium, if not safeguarded, are conducive to the production of cancer, presumably on account of the chronic irritation or inflammation caused.

13. That prominent among predisposing factors for which one should be on guard are chronic irritation and inflammation, repeated acute trauma, cicatricial tissue, such as lupus and scars, benign tumors, warts, moles, nevi (birth marks), etc. Moreover, it must be borne in mind that the changes occurring in the nature of benign tumors or of tissue, as well as the occurrence of any abnormal discharge from any part of the body, especially if it be blood stained, are to be regarded as suspicious.

14. That while there is some evidence cancer is increasing, such evidence does not justify any present alarm.

15. That suggestions, which are put forward from time to time regarding eugenic, dietetic and other means of limiting cancer, should not be accepted by the public until definitely endorsed by the consensus of expert opinion. Such consensus does not exist today.

16. That there is nothing in the origin of cancer which calls for a feeling of shame or the necessity for concealment.

17. That it will be productive of good results if members of the public who are anxious about their health, and those who wish to preserve it will, on the one hand, avoid assuming themselves to be sufferers from one or another dreadful disease but will, on the other hand, submit themselves periodically to the family physician for a thorough examination.

18. That at all times, and under all conditions, there is much to be hoped for and nothing to be feared from living a normal and moderate life.

19. That the finding of any abnormal condition in or about the body should be taken as an indication for competent professional and not personal attention.

20. That watchwords for the public "until the day dawns" and the cancer problem is solved, are—alertness without apprehension, hope without neglect, early and efficient examination when there is doubt, early and efficient treatment when the doubt has been determined.

34 Gramercy Park

THE HOSPITAL AND ITS ABUSES

J. W. KENNEDY
Philadelphia, Pa.

We feel it is of special interest to all concerned, laity, hospital and the medical profession, to say a word in defense of the hospital during these war days when the hospital will be called upon for superlative degrees of service.

The late Joseph Price and I have conducted the Joseph Price Memorial Hospital for over sixty years and therefore I feel I am in a position more or less to speak for the hospital. The Lord only knows, if the institution had a voice, it would discharge a storm of resentment to nearly all who are associated with the institution.

When any dissension arises between the institution and the individual, the institution always pays and pays. This often becomes an imposition and very poor sportsmanship is shown toward charitable institutions.

The hospital as an institution is peculiarly subjected to all kinds of waste and careless conduct by many of its inmates, professional and otherwise. All hospital equipment and supplies are purchased at a price far beyond that which might be peculiar to ordinary business and replacements are constant and numerous.

If there is any more wasteful individual than is found in the average intern, I have no knowledge of such prodigal son. I should like to be a degree more charitable toward the average professional nurse, but must say it strains any chivalrous qualities I may possess to remain restrained in my expressions.

We wonder if the profession really knows that it costs five or six times as much to prepare for and conduct a modern major operation today than it did forty or fifty years ago. Modern surgery today is conducted with the greatest degree of extravagance and waste, indeed, the average abdominal operation as seen in a modern clinic is not just an operation, it is really an event. At least three times as many hands are in evidence as is necessary and ten times as many instruments are on display, all elements of waste and sources of trauma, infection and so forth.

The profession in general has little, if any, idea of the cost of rubber gloves that are used in any year. Here a little gentleness and some idea of thrift would save the hospitals throughout our country thousands of dollars.

The extravagance in the use of ligature and suture material is beyond the exhibition of common sense and borders on vandalism. Thousands of dollars are wasted on excessive use of ligature material, and catgut and absorbable materials in general are many times more expensive than the use of silk, cotton or linen.

The popular and more or less spectacular left hand tie of the ligature is wasteful beyond reason. Twenty inches of ligature is used to make a single tie by the left hand juggling. Dr. John F. Erdmann, of New York, wraps his ligature material around his left hand and then makes a conservative tie with the right hand. Dr. Fred L. Adair, of Chicago, holds a spool of ligature material in his left hand and makes the tie with the right hand. These gentlemen are both skilled operators and their methods of handling ligature material is conservative and a great economy to the institution in which they work.

If the medical profession would for a few years become the hospital, as the late Joseph Price and I have been for over sixty years, they would change many of their extravagant habits for which the hospital pays and pays. In abdominal surgery, at this time, fully five times as many ligatures are used as are necessary; this adds trauma, necrosis, foreign bodies and loss of time; all deterrents.

The extravagant technic which is used today is wasteful to a profound degree. The gross number of sponges and gauze towels, which are on exhibition in every operating room of our land, is typical of today's waste, and the exhibition of hundreds of dollars worth of ingenious instruments is a fast growing indication of the surgeon's lack of handicraft.

In 1878, the late Joseph Price began his abdominal surgery in the slums of Philadelphia among bedbugs and lice, and he did the first one hundred abdominal operations which were performed in America for pus conditions, with one death. There is no better record to this day in any modern hospital, the world over. I said to Doctor Price, "How did you manage your operating technic?" He said, "I made a small circle of cleanliness and stayed within that circle in my surgery." Probably no operator had such a simple and inexpensive technic as he. Imagine the extravagant technic of today, as seen in almost any hospital, being carried out in the slums on these very ill patients! The death rate would be ten times that of Joseph Price. .

The hospital impositions cannot alone be summed up from the viewpoint of dollars and cents; the prolonged operating time necessitating the intoxicating analgesics and anesthetics; the extravagant incisions; the traumatic use of the ingenious retractors and many hands in the operation; the exaggerated Trendelenburg position; the excessive and unnecessary ligating of structures; the inordinate use of gauze towels and sponges, have robbed the surgeon of his cunning and the patient pays this time as well as the hospital.

Today, the merit of excellence of the hospital is being judged by its facilities and not its abilities. The marble and bronze structure, rugs, curtains and all the spectacular dirt collectors and odor retainers may be termed facilities and the ignorant patient demands such for her money, whereas, the clean and willing hands, the scientific and able personnel, which, after all, are the real abilities of the institution, count for little.

I recall, early in my experience, a patient who came to consult Dr. Joseph Price for removal of a large tumor. The hospital superintendent was unable to show her a room with rugs, draperies and upholstered furniture, so she left the hospital and went elsewhere for her operation and died from operative hemorrhage the night she was operated upon.

The hospital has been held culpable for an odor known as the hospital odor. This is unnecessary and the useless upholstered furniture, draperies and so forth, have much to do with retaining this disagreeable odor and infections in general.

The profession should feel that the hospital is their professional home and in many ways is an asset to them. Doctors receive many favors for which the institution asks no compensation. The superintendents of our hospitals, in general, will tell you that the average physician, who attends patients in the institution, has little idea of the trials which are heaped upon the hospital and that he has feeble ideas of economy.

Twenty to forty years ago, the hospital had a very high standing in the community. The institution was looked upon as the noblest type of charity. In those days the patients were conscientious in the payment of hospital bills and did not quibble about a few cents difference in the estimated hospital accounts. Today, the hospital is just another expense to the family and the institution's accounts are met by rigid business rules which are about as merciful as stock transactions.

Recently, the husband of a patient who had been operated upon in the Joseph Price Memorial Hospital asked for a fifty dollar reduction in his bill and such was granted. This man left the institution and went immediately to a fashionable cafe and treated five or six of his friends to an extravagant lunch and made the remark that the lunch was on the Joseph Price Hospital, as he had just obtained a reduction of fifty dollars on his hospital bill. The world is full of such people.

If you want to know something about personal honesty, run a hospital and make no financial demands until both hospital and professional services have been rendered, and you will find that ninety percent of the people who do not pay their hospital bills while in the institution, never will pay them.

The members of the medical profession constantly take the part of a complaining patient for supposed negligence on the part of the hospital. Nine times out of ten it is the fault of the patient and not the institution, and the less the patient has at home, the greater the complaint of hospital treatment.

We are in war; the hospital, so to speak, is on the firing line, and the profession must give a helping hand. Shortage of nurses has thrown a great burden on hospital services all over our land.

The boards which have been in charge of training schools for nurses have embarrassed the profession and hospitals to a perplexing degree by closing hundreds of small training schools for nurses throughout the country. They gave as an excuse that there were too many nurses, and that it was necessary to have nurses trained in the very large institutions which could afford departmental instruction in the education of nurses.

In the first place, there never has been a time when there were too many professional nurses in our country. There has never been a time when the sick had as much nursing care as they were entitled to. The average hospital does the best it can with its limited nursing staff. In the Joseph Price Memorial Hospital, where the greatest nursing attention is demanded, and no patient who has had a major operation is left a second without a nurse the first twenty-four hours, there has not been one case of postoperative pneumonia in the sixty years of the institution's existence. We give our nursing care credit for the total absence of this serious postoperative complication. It is the exposure to chill following any operation, when the patient is fretful and exposes herself, during the time when she is dissipating heat, that is one of the most fertile causes of a fatal postoperative complication which may be laid at the door of careless nursing.

In regard to the smaller schools not being able to give departmental nursing, this is one of those exactions which sound educational and scientific, but which are really not founded on fact.

If the nurse wants to be a specialist in a particular line, she may take a postgraduate course in that line. What we want today, and we want thousands of them, are good clean strong-bodied nurses who have had a training in a reputable school.

The small hospitals scattered throughout the country had access to a large number of healthy young women who were graduates of local schools or high schools and who were residing in the neighborhood of a particular hospital, and they afforded the very best material for the professional nurse. The closure of these schools was an arbitrary act and the greatest detriment to the local hospital and thousands of prospective nurses whom we so much need today.

The State Boards which passed upon the qualifications of nurses contended that the hospitals could be run more economically by graduate nurses than by conducting a training school for nurses. This is far from the truth. It costs us more than twice as much to conduct the Joseph Price Memorial Hospital with graduate nurses as it did with pupil nurses, and we do not have one-half the number of nurses and therefore cannot take as good care of our patients as we did during the years we conducted our own training school.

If our State Boards are to exact a Vassar or Smith College degree for our young women before they take up nursing, who is going to do the nursing? Must the patient pay for a nurse maid to wait on the nurse? The medical profession has never been placed in such a helpless position on account of the scarcity of nurses, and the patients pay the price in mortality. We should have had some determining voice in the education and supply of the professional nurse who is the strongest pillar upon which the medical profession leans for the proper care of the sick. Our State Boards, which pass upon the ability of the young women who constitute the nursing profession, should have in mind, beside the particular professional instructions to the nurses, some semblance of duty to the patient, physician and hospital and not too much said about stated hours and pay. They, as teachers, should know that if the professional nurse is to have a standard of nursing hours and remuneration, she no longer will retain her ethical professional standing in the medical profession. The member of the medical profession, physician or nurse, who will do no charity and measures his or her duty to patients by the yardstick of dollars, cents and hours, is no longer a physician or nurse. Nothing so broadens or ennobles any member of the medical profession as does the giving of their services, at times for charity.

When the medical profession and professional nurse join the closed shop, then all that is typical of the profession is lost and we join the ranks of recalcitrant union labor, that most un-American institution.

Thirty or forty years ago, when any of our staff of pupil nurses was operated upon, some nurse friend came forth and volunteered her services free. I trust that others today see the same humane considerate nurse more often than I do. I should dislike to feel the spirit of Florence Nightingale no longer lives.

No other institution has been so robbed of its help as has the hospital. Our government's failure to standardize prices and wages and the extravagant prices paid by firms who are doing government war work, has demoralized labor of all kinds and made all those who serve in civil institutions discontented and unmanageable. This discussion of time and half time or double time with double pay per hour is not fair or honorable in either time of peace, war or any emergency. If a laborer is not willing to put in extra hours with the usual pay per hour, in any emergency, he is not performing his duty as an American citizen.

If our hospital elevator fails to work on Sunday, holiday or Saturday, after a certain hour, the institution must pay for double time for the repairs; indeed, it amounts to quadruple time.

A section of one of our hospital heaters cracked in mid-winter, necessitating drawing the fire from the boiler. I overheard the conversation between the foreman and the men doing the repair work. When it came to the time to stop work, the foreman asked the men to continue work as one of the hospital buildings was entirely without heat in the middle of winter. One of the workmen said, "To hell with the doctor, the hospital and the sick; that is their own funeral. I am quitting and the union protects me." This abuse existing in the hearts of men, how long will it be before our profession will be affronted by that most un-American and unsportsman-like exhibition of picketing in front of our hospitals.

If we have much of this sort of material in our country, is it not plain to thinking men that we shall have another battle to fight after this war is over? There is no democracy or humanity existing in any country where mob law, union or nonunion, is permitted to reign for a minute.

While I am in our hospital, it takes me fifteen or

twenty minutes to do an average abdominal operation, but if I am called at night, it takes me several hours to do the same work. I do not ask for extra pay, indeed, much of this work is charity. This is the type of service for which the laborer demands double pay or he will not act. This extra price for labor and high prices for all supplies, food and so forth, incident to war, has always come from a psychological, political or damnably dishonest estimate of values and never has come from economical necessity.

Today, we have the most marked exhibition of a violation of the accomplishment of the common fitness of things in the billions of dollars which Congress is almost daily appropriating for war expenses. Constantly more appeals are being made for further sources of war revenue. It passes understanding that some dominant effort has not been made to keep war expenses at their minimum by fixing the prices of labor, all war needs and the necessities of life. If a government can raise taxes, it can stabilize prices, then our war budget could be reduced to one-half or one-third of its present cost. We take the position that prices of labor and all necessities of life should go down rather than up during war and that the present extravagance is just as void of necessity as fashion is void of reason.

War is a great emergency. In times of trouble in any emergency we should not engage in a debauch of spending, but meet calamity with the sobriety of economy.

After war had been declared, our hospital carpenter went to a nearby vacant lot and dug up several window weights that had been there for years. When he went to pay the regular price that he had paid over a number of years, the owner of the lot said, "You will have to pay three times what you paid before the war."

On the same day I went to a surgical instrument store in Philadelphia to buy some silk that Doctor Price and I had been purchasing for over fifty years. I was told that the price of the silk had advanced three hundred percent since war was declared. These are some of the abuses to which the hospital is subjected each day. Prices of labor, food and every commodity which is of use during war should go down in price and never up. If honesty governs war conditions, then all men and women will be serving the country in the hour of trial.

The most contemptible citizen I know is the man who goes to Washington for a dollar a year and raises the selling price three hundred percent of whatever he produces in his factory.

We physicians are in lifesaving service and we have the right to say to any man, union or nonunion, if, by your selfish demands for money or hours, you delay by a day the placing of a standard rifle in the hands of that boy of ours who is lying on his belly on the firing line trying to get aim on the enemy, you are less an American than the possible rifle victim.

During the last World War we saw all of these same impositions and acts of selfishness in order to profit by blood money, and thousands of predictions were made that if our country were again to engage in a war, such injustice would not be permitted. Yet not a fearless constructive act has been made by those in authority to prevent a repetition of war abuses. Shorter hours and more pay will not win the war, nor will abuses to our charitable institutions help to take care of our victims from the front. All of these abuses of the hospital and otherwise are never a necessity, but come from selfish dishonesty of mankind.

241 NORTH EIGHTEENTH STREET

Vitamin C and Wound Healing

Marshall K. Bartlett, Chester M. Jones and Anna E. Ryan, Boston, Mass. (*New England Journal of Medicine,* March 19, 1942) present two articles on vitamin C in wound healing. The first article deals with experimental wounds in guinea pigs. The authors describe the experiments which were undertaken to determine the concentration of vitamin C in healing wounds in guinea pigs under a variety of dietary conditions and to correlate the ascorbic acid content with the tensile strength of these wounds. Their conclusions are summarized as follows: Wide variations of the ascorbic acid content of guinea-pig tissues can be caused by a high or low intake of ascorbic acid. Similar variations of ascorbic acid content can be demonstrated in a healing wound of the abdominal wall, depending on the vitamin C intake. Animals on a scorbutic diet show essentially no increase in ascorbic acid in the healing area and slightly lowered values in the remainder of the abdominal wall, compared with the level in control biopsies obtained at the time of operation. The liver and kidney also show low levels.

On a high ascorbic acid intake, a striking increase in vitamin C content of the healing wound over that of the control biopsy can be demonstrated. The abdominal wall adjacent to the scar also shows a considerable rise, and a slight increase is found even at a distance from the wound. High levels are also found in the liver and kidney. In these experimental animals, the tissue level attained by the preoperative administration of ascorbic acid is of much less importance in establishing the optimum ascorbic acid content of the healing wound and other tissues studied than the vitamin C intake during the postoperative period. The tensile strength of wounds showing a high ascorbic acid content is much greater than that of those with low vitamin C values.

In the second article, the authors discuss the ascorbic acid content and tensile strength of healing wounds in human beings. Studies were made on six male patients to obtain information concerning the importance of vitamin C in wound healing in humans by means of tissue ascorbic acid determinations, contrasting the vitamin C content of ten-day-old healing scars in fascia and skin with that of control biopsies of these tissues obtained at the time the incisions were made. From their findings, they present the following conclusions: A sufficient depletion of vitamin C produces a decreased ascorbic acid content and tensile strength in healing wounds in the skin and fascia of human beings. A fasting plasma ascorbic acid level below 0.20 mg. per 100 cc. must be reached before these changes appear. In the presence of adequate vitamin C, the magnitude of the rise in ascorbic acid content in healing fascial scars, compared with that of control biopsies, is much greater than that shown by healing skin scars. In spite of a low plasma ascorbic acid level at the time of operation, normal wound healing may be produced by adequate vitamin C therapy during the postoperative period.

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AN EVALUATION OF VITAMIN B THERAPY IN NEUROLOGICAL AND PSYCHIATRIC CONDITIONS*

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The part assigned to me in this symposium on nutrition deals exclusively with the vitamin B complex, and the clinical application and value of its known components in neurological and psychiatric conditions. Approximately fourteen components are now known to constitute the water soluble vitamin B complex, and experimental work now in progress indicates that many more fractions will be added. Of these substances six have been isolated in pure crystalline form and their structural formulæ definitely determined; they are vitamin B_1—thiamine hydrochloride, vitamin B_2—riboflavin, vitamin B_6—pyridoxine, p-p factor—nicotinic acid, filtrate factor—pantothenic acid, factor w—p-aminobenzoic acid.

With the advent of each discovery of a remarkable substance in the treatment of disease, the medical literature becomes plethoric with claims of its efficacy in innumerable conditions. This is not, in all instances, merely due to scientific indolence, but rather to wishful experimentation in conditions which have failed to respond in a completely satisfactory way to measures employed heretofore. An occasional "nugget" found among the many tedious siftings is ample justification for this tendency in medical practice. This has been particularly so with the vitamins, and as the literature accumulates siftings are necessary from time to time to reveal the valuable and to discard the valueless.

To discuss the extensive literature on the experimental data regarding the biochemical, physiological, and pathological aspects of vitamin B deficiency would take us too far afield for the practical intent of this paper. An effort to adhere closely to comments on the clinical application of the vitamin B components will be exercised, except in such instances where a word or two on a deficiency state may clarify the subject.

Vitamin B_1—Thiamine Hydrochloride

From the neuropsychiatric aspect vitamin B_1 deficiencies manifest themselves in conditions which may be grouped broadly into three categories. The first and perhaps most frequently occurring is concerned with involvement of the peripheral nerves. This occurs in a host of conditions which have been variously classified under the headings of infectious neuritis, chemical neuritis, neuritis of metabolic and nutritional disorders and neuritis of mechanical origin. Since the almost universal conclusion of such investigators as Stransky (1), Doinikow (2), Grieco (3), Gombault (4), Meyer (5), Dreschfeld (6), Lewy (7) and others, that the socalled neuritides encountered in the categories just enumerated are essentially degenerative and not inflammatory, the term peripheral "neuropathy" (8) is not only justified but preferable. Lewy states, "the basic factor in most, if not in all neuropathies, is a B avitaminosis".

The second group consists of conditions resulting from a biochemical and morphological alteration of ganglion cells and their processes in certain areas of the brain and cord and thus may properly be termed "central neuronopathy".

The third category pertains to a group-picture of symptoms composed of asthenia, fatigability, insomnia, anorexia, headache, backache, irritability, palpitation, fleeting pains, gastrointestinal irregularities and mental depression. These symptoms may be due to implication of the circulatory, muscular, central, peripheral and vegetative nervous systems singly or jointly. This composite "waste-basket entity" may be designated as the neurasthenia-like syndrome. As will be seen in the discussion of nicotinic acid (p-p factor) and pyridoxine (B_6) the lack of these substances likewise is concerned in the production of abnormal states seen in groups 2 and 3. In the main, therefore, the B_1 hypo- or avitaminotic states may be grouped as follows:

I. Peripheral neuropathies.
II. Central neuronopathies.
III. Neurasthenia-like syndrome.

I. Peripheral Neuropathies

Among this large group, certain neuropathies have been quite satisfactorily demonstrated to be the result of vitamin B_1 deficiency and the therapeutic response to thiamine hydrochloride has established the empiric correctness of these claims. Others fall into the category

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of questionable B_1 deficiency, the evidence in the literature being either meagre or contradictory. In this latter group the claims to encouraging results may be partly justified in view of the possibility of a polyvitamin deficiency existing in certain neurological or psychiatric conditions.

The various neuropathies will be discussed in the order of their relative response to vitamin B_1 therapy and the established evidence of vitamin B_1 deficiency.

Beriberi is a condition with a lengthy history and is characterized clinically by, 1, degenerative changes in the nervous system manifested chiefly by a multiple peripheral neuropathy; 2, cardiac pathology; 3, generalized edema and serous effusions. Vedder (9) stated, "the phenomenal recovery of birds that have developed polyneuritis from exclusive rice feeding after the administration of vitamins B_1 has been noted by all observers since the time of Eijkman." Kao (10) reported sixty-five cases of infantile beriberi among which neurological conditions were present, and which responded to the use of vitamin B. Kagawa (11) observed the recovery, following vitamin B therapy, of patients having "axial neuritis" during the course of mild beriberi. The appearance of the total syndrome of beriberi, as well as the simple presence of a polyneuropathy in alcoholic addicts has been reported by numerous authors. The neuropathy of alcoholism may, therefore, be discussed jointly with beriberi of nutritional deficiency, in that alcohol *per se* does not produce the changes seen in the nervous system. The neuropathy is unquestionably due to a nutritional deficiency in which vitamin B_1 is mainly concerned. This has been demonstrated by Jolliffe and Colbert (12), Rilton (13) Goodhart and Jolliffe (14), Van Bogaert (15), Meyers (16), Strauss (17), and Price (18). The histopathological appearance of the involved nervous structures cannot be distinguished from experimentally produced lesions of thiamine deficiency, as has been so well demonstrated by Swank (19) and by Street, Zimmermann, Cowgill, Hoff, and Fox (20).

The specific treatment for beriberi consists of the parenteral and oral administration of thiamine hydrochloride. Spies, Vilter and Ashe (21) recommend five mg. of thiamine hydrochloride in saline solution intramuscularly or intravenously twice daily, or ten mg. orally for infantile beriberi. For severe beriberi in the adult, twenty to fifty mg. of thiamine hydrochloride should be used parenterally daily until the symptoms have completely subsided. The administration of vitamin B_1 was attended with satisfying response in the cases of alcoholic peripheral neuropathy reported by Romano (22), Goodhart and Jolliffe (14), Rimbaud, Boucomont and Godlewski (23), and Askey (24).

The polyneuropathy so frequently encountered in pregnancy whether due to hyperemesis gravidarum or to faulty diet responds favorably to the specific use of thiamine hydrochloride, as has been reported by numerous authors (25). Improvement is rapid with the relief of pain a conspicuous and welcome effect of B_1 therapy.

Some doubt has been cast upon the specificity of thiamine deficiency in the production of polyneuropathy, by Meiklejohn (26), although he does agree to a nutritional disturbance being the cause of the polyneuropathies associated with alcoholism, pregnancy and gastrointestinal disturbances. He implies the existence of an antineuritic vitamin as yet to be unearthed. Stähler (25a-f) demonstrated that the polyneuropathy occurring in pregnancy is due to thiamine deficiency, by quantitative determinations of excreted thiamine in the urine of nonpregnant, healthy pregnant, and pregnant women with polyneuropathy after the daily intramuscular injection of ten mg. thiamine hydrochloride. His experiment showed that the pregnant women with polyneuropathy excreted one-fourth the quantity of thiamine than did nonpregnant women, and one-third the quantity than did healthy pregnant women, thereby indicating a specific need for thiamine in this type of neuropathy. He also showed that pregnant women require more vitamin B_1 than nonpregnant women. Joliffe's (27) article, "Studies in Alcohol," also appears to effectively dispute Meiklejohn's views.

The peripheral neuropathy encountered in pellagra is but part of the total syndrome in which involvement of spinal cord and brain, alimentary and dermal systems complete the picture. The clinical aspects of this form of neuropathy are similar to the neuropathy seen in chronic alcoholism and beriberi. In 1938 Spies and Aring (28) made the important observations that thiamine relieved the peripheral neuropathy of pellagra but did not influence the other symptoms, whereas nicotinic acid was effectual in the eradication of the dermal lesions, glossitis and stomatitis, and mental symptoms, but had no effect on the peripheral neuropathy. These impressions have been further substantiated by Matthews (29), Goodhart and Jolliffe (14), Wortis (30), and Lewy, Spies and Aring (31).

Although the optic nerve, anatomically, is not a peripheral nerve, its involvement by the same factors producing peripheral neuropathies permit its inclusion at this point. Retrobulbar or optic neuropathy occurring in dietary inadequacy and in association with excessive use of alcohol or tobacco have been favorably influenced by the use of vitamin B_1. Moore (32) reported two hundred cases, due to nutritional deficiency, which showed dramatic results when treated with vitamin B_1. Similar encouraging results were obtained in the optic neuropathy following infection, the abuse of alcohol and tobacco, reported by Pflimlin (33), Cavalacci (34), Paternostro (35), Cushman (36), and Johnson (37). Conclusive evidence of completely satisfactory response to vitamin B_1 as a single specific factor in optic neuropathy is still wanting, even though Ohta (38) indicated that retrobulbar neuropathy may constitute one of the characteristic manifestations of infantile beriberi.

Some cases of diabetes are known to be associated with spinal cord changes and peripheral neuropathy. Lewy (7) has developed clearly the biochemical and pathological processes involved and has indicated that a deficiency of vitamin B may be concerned in the production of the peripheral neuropathy. Fein, Ralli, and Jolliffe (39) observed a symmetrical peripheral neuropathy occurring in nine of 422 ambulant diabetics, and on the basis of the similarity of the symptoms to those of proved avitaminosis B_1 neuropathy and the very favorable response to thiamine hydrochloride therapy, they concluded that this type of neuropathy was definitely due to vitamin B_1 deficiency. Good results were reported in a case of diabetic polyneuropathy following the use of thiamine hydrochloride by Kühnau, Schroed-

er and Wolf (40). Levy (41) would introduce a discordant note by stating that the present knowledge of diabetic neuropathy does not as yet warrant the use of thiamine hydrochloride as a specific for the condition in those patients receiving a well balanced diet. However, the favorable results reported by Vorhaus, Williams, and Waterman (42), Sciclounoff and Broccard (43), Needles (44), and Fein et al. (39) swings the balance in the direction of an unquestionable diabetic neuropathy, wherein the possible factor of arteriosclerotic involvement does not enter.

It is well established that about three-quarters of all cases of primary pernicious anemia are characterized by involvement of the central nervous system and peripheral nerves. Greenfield and Carmichael (45) have shown that the peripheral neuropathy of pernicious anemia pathologically is indistinguishable from that encountered in chronic alcoholism, pellagra and nutritional deficiency states. Lewy (7) emphasizes the peripheral character of the paresthesias of the fingers and toes and cites the encouraging results obtained by Ungley (46) following the use of vitamin B_1. The spinal cord changes of pernicious anemia have been simulated in a measure in the experimental work of Zimmerman et al. (47), and Gildea et al. (48), the former producing the changes with a vitamin B_2 deficient diet and the latter by a vitamin B_1 deficient diet. Aring and Spies (49) have succinctly summed up the problem of the neural involvement of pernicious anemia and kept the door open as regards vitamin therapy by saying, "at the present time the physician will do well to use the crude liver extracts which have proved to be effective in the treatment of spinal cord lesions associated with pernicious anemia. Vitamin B_1 preparations are, of course, theoretically valuable accessories and their use should not be denied."

My experience in several cases of pernicious anemia giving evidence of marked paresthesias and moderate spinal cord involvement, following the use of synthetic vitamins B_1, B_2, and B_6 in conjunction with liver therapy parenterally, showed marked but by no means complete, improvement of the sensory and motor disturbances. Sciclounoff and Naville (50) obtained favorable results in eight of thirteen patients with pernicious anemia who received four to ten mg. thiamine hydrochloride daily. Motility and sensitivity mainly were improved. A controlled study of nineteen cases of pernicious anemia, by Zillhardt, Maclean and Murphy (51), showed that residual neural manifestations may persist despite appropriate liver therapy, and that the use of thiamine hydrochloride parenterally resulted in striking improvement of many neurological symptoms up to a point beyond which no further change was forthcoming.

The sensory manifestations of neural leprosy, as is well known, may consist of paresthesias, pain or anesthesia. In the main lepers suffer from nutritional deficiency and in particular from vitamin B deficiency. Hou (52) studied the urinary excretion of vitamin B_1 in thirty-one lepers and found it to be below normal or entirely absent. Keil (53) indicated the similarity of the symptoms of neural leprosy to those encountered in vitamin B_1 deficiency and reported encouraging results following the parenteral use of five to ten mg. daily over a period of several weeks. Badger and Patrick (54) obtained gratifying response with the parenteral use of vitamin B_1 in patients with leprous neuropathy complaining of pain. Hyperaesthesias and anaesthesias were relieved in another group of lepers receiving ten mg. vitamin B_1 daily, as reported by Gminder (55). He believed that vitamin B_1 was the most satisfactory therapeutic measure in overcoming the symptoms of early neural leprosy.

Selfridge (56) reported improvement in cases of nerve deafness following the use of thiamine hydrochloride but noted optimum improvement when nicotinic acid was given. Brandenburg (57) treated a case of severe bilateral tinnitus and impaired hearing with intravenously administered vitamin B_1 with successful results. Vitamin B complex was used by Veasey (58) in a series of cases of nerve deafness with varying and by no means conclusive results.

Pain always has been a dominating, perplexing and embarrassing neurological problem, and in an attempt to eliminate these attributes of this problem, vitamin B_1 has been used in every type of painful condition. No uniformity of results obtain. The following conditions which will be discussed do not all fall within the category of peripheral neuropathies but the common denominator of pain permits of their present grouping. Of the various algias trigeminal neuralgia has received considerable attention insofar as vitamin B_1 therapy is concerned. Kühnau et al (40), and Borsook, Kremers and Wiggins (59), and Bakhsh (60), reported favorable results in their series of cases of trigeminal neuralgia treated parenterally with large doses of thiamine hydrochloride. Aring and Spies (49), and Rose and Jacobson (61) failed to observe satisfactory analgesic effects of thiamine hydrochloride even when given in fifty to one hundred mg. doses daily over an extended period of time. This latter attitude has been corroborated more recently by Wortis and Jolliffe (62).

The crises of tabes dorsalis often fail to yield to the usual antisyphilitic therapy and other measures frequently employed. Metildi (63) advocated the use of vitamin B_1 in the lightning pains of tabes as the result of the marked improvement in six cases which he treated. Reese and Hodgson (64) believe that vitamin therapy (liver extract, vitamin B_1 and yeast) favorably influence the sensory and ataxic phenomena encountered in tabes dorsalis. Aring and Spies (49) have observed the relief of tabetic crises following the intravenous injection of 100 mg. thiamine in physiological saline solution, and with the return of pain, the simple intravenous administration of saline solution was sufficient again to bring about a cessation of pain. In two tabetic patients experiencing severe lightning pains in the lower limbs and in whom the usual therapeutic measures failed, I was able to secure complete relief by the parenteral use of 33 mg. thiamine hydrochloride daily. The pain disappeared after the third or fourth day, and with semiweekly injections thereafter the patients were kept pain-free. Insufficient data and the paucity of cases studied do not permit of conclusions regarding the value of vitamin B_1 in tabes dorsalis.

The painful lesions of herpes zoster have been treated with thiamine with reported favorable results by Kühnau et al. (40), and by Goodman (65). Goodman believed the pain and skin lesions were more satisfactorily eliminated by the use of vitamin B_1 than by any other form of treatment. On the other hand,

Rattner and Roll (66) reported sixteen cases of herpes zoster which yielded unsatisfactory results with vitamin B_1 therapy.

An interesting use of vitamin B_1 in the pain associated with amputation stumps has been reported by Sliosberg (67). In an evaluation of the treatment in seventy-four of one hundred cases he found that eleven obtained complete relief, thirty-nine were greatly relieved, ten obtained moderate relief, seven were slightly improved and seven failed to respond. Ten mg. of vitamin B_1 were given parenterally daily with occasional twenty-five mg. doses on alternate days.

Other conditions, characterized by pain, which have been reported as being relieved or "cured" by the use of vitamin B_1 are, ischemic neuralgia (Naide, 68); occipital, cervical and femoral neuralgias (Kühnau et al., 40); migraine (Palmer, 69, and Kühnau et al., 40); acrodynia (Durand, Spickard and Burgess, 70); dry sockets subsequent to extraction of teeth (Whitfield, 71); pain associated with varicose ulcers (Ochsner and Smith, 72). In discussing the various forms of treatment of intractable pain, Behan (73) stated that vitamin B_1 or the B complex should be given to every patient suffering from such pain. Aring and Spies (49), on the other hand, said, "our experience with patients suffering from severe pain (carcinoma, cord tumor, brachial and trigeminal neuralgia) was that thiamine, administered intravenously in fifty to one hundred mg. doses daily over a period of ten days, did not act as an analgesic . . . it is our belief that vitamin B_1 is useful in the amelioration of these (painful) disorders only if they are caused by a deficiency of vitamin B_1."

Cases of acute peripheral facial paralysis were reported cured, within six to eighteen days, by Lerner (74), who used 3.3 to 16.5 mg. thiamine intramuscularly daily. He also claimed to have effectively aided two cases of nine and fourteen years' duration respectively, by similar treatment.

Postdiphtheritic neuropathies have been improved with the use of vtiamin B_1 as claimed by Knapp (75) and Feige (76), whereas Peters and Cunningham (77) show that the administration of vitamin B_1 does not influence the incidence of paralysis. In the main, the neuropathies of infectious origin may be said not to respond to thiamine administration. However, the occurrence of a symmetrical peripheral neuropathy during the course of a chronic febrile disease may, because of the induced nutritional deficiency, respond to adequate B_1 therapy augmented with a proper diet. Vilter, Aring and Spies (78) described a case of arsenical peripheral neuropathy in which no improvement was observed after intensive vitamin B_1 treatment, but which did show gratifying results after the use of pyridoxine (vitamin B_6). Chemical neuropathies, by and large, fail to respond to the use of vitamin B_1.

II. Central Neuronopathies

Vitamin B_1 has been used clinically in this group of conditions having as a pathological substratum demonstrable alterations in the structure of the neurone. Notable among this group are the encephalopathies associated with the chronic abuse of alcohol; Wernicke's syndrome, Korsakoff's syndrome, delirium tremens and other clinical manifestations of chronic alcoholism.

Wernicke's syndrome, originally described as polioencephalitis acuta hemorrhagica superior, consists clinically of a rather precipitate onset of ophthalmoplegias, vomiting, visual defect, photophobia, ataxia, dizziness, somnolence and stupor. Although most closely identified with alcohol as an etiological factor, Wernicke's syndrome has followed from other conditions producing severe nutritional deprivation (62). Briefly, the pathology encountered in Wernicke's disease consists of parenchymatous degenerative changes of varying degree in the region of the periaqueductal and periventricular gray substance, associated with capillary hyperplasia and petechial hemorrhages. The extent of the neuronal degeneration, however, varies from case to case and may involve other areas of the brain.

In 1938, Alexander, Myerson and Pijoan (79) introduced for the first time the experimental evidence that the pathological changes of Wernicke's syndrome are associated with a vitamin B_1 deprivation. Further work by Alexander (80), and particularly the study by Alexander, Green, Evans and Wolf (81), in which vitamin B_1 therapy was used to prevent and cure a condition occurring in foxes and fishes identical clinically and pathologically with Wernicke's disease in man, further substantiates the role of thiamine in this syndrome. A more extensive study of the clinical and chemical aspects of Wernicke's syndrome by Wortis, Jolliffe, Stein and Bueding (82) indicates that the ophthalmoplegias and certain aspects of the mental disturbances are associated with vitamin B_1 deficiency, but the total syndrome is due to a multiple nutritional deficiency. Gratifying clinical results were obtained by Jolliffe, Wortis and Fein (62) when adequate vitamin therapy (including thiamine hydrochloride) was given their cases of Wernicke's disease. They noted, however, that recovered cases showed as a residual, the Korsakoff's syndrome.

Korsakoff's syndrome is a combination of a form of psychosis and a peripheral neuropathy, the characteristics of the latter having led to the suspicion that vitamin B_1 deficiency may be at fault. The psychosis has certain distinguishing features such as, confabulation, disorientation in space and time, faulty retention, varying degrees of amnesia, and other general symptoms of a toxic state, such as delusions, disturbances of emotional tone, visual and auditory hallucinations, etc. Korsakoff's psychosis is not necessarily accompanied by a peripheral neuropathy in every case. Here again alcohol is the main offending etiological factor but numerous other causes may be responsible, among which can be included, cachexias, fevers, puerperal sepsis, encephalitis, craniocerebral injuries, poisoning due to carbon monoxide, lead, arsenic and noxious drugs. Sullivan and Simon (83) in 1938 and later Bowman, Goodhart and Jolliffe (84) indicated that vitamin B_1 was of value in effecting improvement in cases of Korsakoff's syndrome. Friedemann (85) reported two patients, with Korsakoff's syndrome associated with complete paralysis, who were able to return to work after being treated with vitamin B_1 given intrathecally. A case of Korsakoff's psychosis with polyneuropathy occurring in a patient with hyperemesis gravidarum and hyperthyroidism, was reported improved by vitamin B_1 therapy, by Van der Hoeven (25c).

It is evident, from the literature, that a specificity of response to vitamin B_1 in Korsakoff's syndrome cannot be demonstrated. Even the peripheral neuropathy accompanying this psychosis fails to respond sat-

isfactorily to thiamine in all instances. In view of the multiple etiology of Korsakoff's syndrome, it is most likely that future treatment with vitamins will be directed in those cases where a definite history of nutritional deficiency is present. Each case must be evaluated carefully from the viewpoint of etiology, evidence of associated deprivation of nutrition, and chronicity, before vitamin therapy can be intelligently applied and appropriate results obtained.

Delirium tremens, as the name would imply, is a "shaky madness" (86) occasionally observed in chronic alcoholics. Alcohol *per se* is not the precipitating agent, but contributing factors such as "infections, lowered chloride content of the blood, lowered vitamin reserves, increased lactic acid in the blood and psychogenic factors," as has been pointed out by Bowman, Wortis, and Keiser (87), are responsible jointly with alcohol. Kiene, Streitwieser and Miller (88) believe that delirium tremens is due to a "vitamin B_1 deficiency brought on by sudden deficits in the maintenance requirements." They further contend that "a central (cerebral) neuronitis, is caused by a perverted carbohydrate and vitamin B_1 relationship, which when treated with adequate vitamin B_1 responds more remarkably (as far as subsidence of symptoms is concerned) than do the peripheral states of polyneuritis of alcoholic origin." Kloster (89) used large doses of vitamin B_1 intravenously in cases of delirium tremens and noted surprising clinical improvement. Santesson (90) also reported favorably on the use of vitamin B_1 in this condition. From the foregoing it would appear that vitamin B_1 is specific in its application to delirium tremens. There are many reports in the literature to the contrary, however. Mainzer and Krause (91) failed to obtain results with large doses of thiamine in a patient suffering with delirium tremens but succeeded after nicotinic acid had been given. Still others (92 a-c) have maintained that lack of thiamine hydrochloride and nicotinic acid are not specific as the etiological substratum in delirium tremens. Much investigative work is still necessary before a satisfactory conclusion can be reached regarding the role of vitamin B_1 and other members of the B complex in delirium tremens.

Other variants of alcoholic psychoses are now considered to be due to disturbances in cerebral metabolism associated with a reversible neuronopathy brought about by a nutritional deprivation, mainly of vitamins, but also of other essential factors (93).

III. Neurasthenia-like Syndrome

This syndrome, the symptoms of which have been enumerated, in part, in the opening paragraphs of this paper, resembles in many respects the neurasthenia classified among the psychoneuroses in psychiatry. Neurasthenia is characterized by mental and physical fatigue plus numerous and often vague complaints such as poor memory, headaches, vague pains, insomnia, inability to concentrate, irritability, poor appetite, confusional states, anxiety, loss of confidence, muscular tension, muscular twitchings, etc. Many causes have been advanced, so numerous and varied as to be unconvincing when considered singly; they include hereditary constitutional predisposition, autointoxication, overwork (Weir Mitchell), masturbation (Freud), autosuggestion (Dubois and Dejerine), and others (94).

It is necessary therefore to distinguish the mental and somatic manifestations of the individual who has a defective personality background from those encountered in the individual suffering from a nutritional deficiency state. Often the two are combined. A study of the effects of induced vitamin B_1 deficiency in man, by Williams, Mason, Wilder and Smith (95), showed that the early phases of such deprivation resembled neurasthenia to a remarkable degree, and in the later stage of deprivation anorexia nervosa was the dominant symptom.

Jolliffe, Goodhart, Gennis and Cline (96) have described a neurasthenia-like syndrome occurring in an experimental group of individuals placed on a vitamin B_1 deficient diet. It is evident, however, that vitamin B_1 is not alone responsible for this syndrome. Spies, Aring, Gelperin and Bean (97) secured complete relief of "neurasthenia," observed in a group of 225 mild pellagrins, by the use of nicotinic acid. Others (98 a-c) have incriminated vitamin B_6 and vitamin E. Moore and Lichstein (99) have studied the incidence of neurasthenic symptoms among the aged and reported favorable results with the use of thiamine hydrochloride and nicotinic acid. They indicated, however, that multiple deficiencies probably exist in such cases. In view of the multiplicity of complaints, involving both the mental and somatic spheres, so commonly seen in this syndrome of "neurasthenia," it is quite likely that it is caused by the lack of many components of the B complex, and possibly other vitamins and "essential factors" as well.

Miscellaneous Conditions

The following group of miscellaneous conditions have been treated with vitamin B_1 with questionable specificity of nutritional deficiency or response to treatment. Harris and Moore (100) treated cases of Ménière's syndrome with thiamine hydrochloride and nicotinic acid separately and in combination. Only the latter method of using the vitamins was of value. Atkinson (101) has presented an interesting approach to the problem of Ménière's syndrome. After eliminating those cases due to histamine sensitivity and allergens he finds a large group which he terms the vasoconstrictor group. In this group he utilizes thiamine hydrochloride and nicotinic acid largely because of their vasodilator action upon the structures within the inner ear, with encouraging results in his hands. The multiple, and as yet poorly defined, etiologies of Ménière's syndrome make it necessary to avoid definite conclusions regarding the efficacy of thiamine and nicotinic acid in this condition.

Broekema (102) treated eighteen cases of anterior poliomyelitis with vitamin B_1 and observed a more rapid recovery than in a series of fourteen cases in which the vitamin was not given. Helms (103) believes that vitamin B deficiency is a predisposing cause of acute anterior poliomyelitis, and in addition to many other points calls attention to the fact that modern methods of milling with resultant loss of vitamin B in the diet, were instituted in 1870, and that since 1880 the number of cases of anterior poliomyelitis has increased. The controversy, regarding the factors influencing the resistance of the host to the specific virus of anterior poliomyelitis will again flare up with the introduction of the vitamin question.

Further investigation may yield confirmatory data to substantiate Helms' views.

Sydenham's chorea has been treated with artificial fever therapy, vitamin B complex orally and thiamine chloride parenterally by Stone (104). His report would indicate that such vitamin therapy produces more satisfactory results than fever therapy alone or previously used methods of treatment. Wortis and Jolliffe (62) have questioned the value of vitamin B therapy in chorea.

In January, 1940, I reported the results of treating with nicotinic acid and vitamin B_1 five patients suffering from multiple sclerosis, (105). Nicotinic acid was demonstrated to have a vasodilator action on the smaller vessels in the brain and spinal cord. At that time I stated, "vitamin B_1 was used in conjunction with nicotinic acid in this series of cases, admittedly on an empiric basis. It was felt that whatever effect thiamin chloride might have on diseased nerve tissues . . . its effect would be enhanced if it was active at the time vasodilation and improved blood supply were operative during the action of nicotinic acid."

Since the original report a larger series of cases (21) have been treated with nicotinic acid and vitamin B_1. Recently riboflavin and pyridoxine have been added to the thiamine and nicotinic acid which are given parenterally. All of these patients, beginning with the first series in 1938, have been placed on a high vitamin, high protein, high fat, balanced carbohydrate diet, which has recently been advocated by Brickner and Brill (106). It may be said at this time that the aggregate estimate of the response to vitamin therapy in multiple sclerosis is to the effect that, it certainly is not specific; the frequently observed subjective improvement of physical well being and diminution of spastic phenomena are not maintained in all cases; whatever improvement does occur probably derives from improved metabolism incident to the vitamin therapy and improved dietary regimen, than from altered morbid changes in the nervous system. Brickner and Brill (106) have pointed out that dietary deficiencies existed in most patients suffering from multiple sclerosis prior to the onset of the disease, and that in all probability nutritional deficiency may be a predisposing cause. Although the etiology of multiple sclerosis still is shrouded in obscurity, continued investigation with vitamin therapy in early cases may yield data of integrating value with the other fields of investigative attack on this problem.

(To be continued)

THE MEDICAL TREATMENT OF BILIARY TRACT DISEASE*

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I have chosen this title, instead of the treatment of gallbladder disease, first, because the gallbladder is only one branch of the biliary tract, and second, because the removal of the gallbladder does not always result in the cure of the patient. However, since the gallbladder is such an important component of the biliary tract, we shall start with a discussion of this subject.

Management of cholecystic disease varies with the pathology present and with the degree of functional disturbance. The patient with gallbladder disease requires consideration from both a medical and a surgical viewpoint. Evaluation of the individual case includes not only an analysis of symptoms and results of cholecystography, but also consideration of the patient's age and state of nutrition, the detection of any associated disease, and knowledge of the cardiac, renal, liver and pancreatic functions. At times medical procedures are completely effective. In other instances, definite indications for immediate or ultimate surgery are present.

The information supplied by cholecystography is invaluable, but in order to estimate functional capacity and to appraise the benefit that may be expected by any line of therapy, an understanding of the physiology of the biliary tract is essential. This may be outlined briefly as follows:

Types of Gallbladder Activity

The gallbladder, like the intestines, manifests three types of activities; absorption, secretion and motor activity.

Absorption.—In the process of absorption the gallbladder concentrates bile, which enters it. Chiefly water and certain inorganic constituents are absorbed. The bile acids render the fats and cholesterol soluble at the acid reaction of the gallbladder bile. The inflamed gallbladder mucosa does not concentrate although, after the inflammation has subsided, concentrative powers may be regained. Cholesterosis does not interfere with the concentrating activity, unless associated with a moderate or severe cholecystitis.

Secretion.—The gallbladder normally secretes a mucoid material. The normal rate is not known but in cystic duct obstruction in humans with a gallbladder fistula, twenty cc. have been collected in twenty-four hours.

Motor activity.—The motor activity of the gallbladder has been carefully studied by Ivy (1), who found two types: first, rhythmic tonus changes amounting to from two to three cm. of bile pressure, and secondly, a tonic contraction of the musculature of the gallbladder as a whole. The contracting gallbladder of the dog may exert a pressure of from twenty to thirty cm. of bile. The force of contraction of the human gallbladder has not been measured, but it has been seen to contract and evacuate by direct vision. The chief stimulus of gallbladder contraction thus far discovered is that demonstrated by Ivy and Oldberg (2), namely, the hormone cholesystokinin. This hormone may be extracted from the duodenal mucosa and when injected intravenously causes a prolonged contraction of the gallbladder with evacuation. The most effective excitants of this hormone production are acids and fats, acting in the upper part of the intestines, particularly egg yolk and cream. Proteins, chiefly meat, rank next. Carbohydrates have no action on the hormone.

It is generally believed that the gallbladder and Oddi's sphincter constitute a functional unit. Whether or

*Read before the New York Physicians Association, March 25, 1942.

not the gallbladder will evacuate when stimulated depends on the tone of the sphincter of Oddi or the duodenum. The sphincter can resist up to seventy-five mm. of bile pressure, whereas the maximum expulsive power, of the normal gallbladder, is thirty cm. Hence, it is possible for a spastic sphincter or duodenum to prevent gallbladder evacuation. In human subjects, it has been shown that if the sphincter is spastic, biliary colic may be produced by exciting the gallbladder to contract. The disturbance in the motor function of the biliary tract has been termed biliary dyskinesia. The latter may be primary when it is not due to organic disease or it may be secondary as a result of organic biliary tract disease.

Certain other facts pertaining to the physiology and functional pathology of the sphincter may be summarized as follows: (a) Any procedure that increases the muscular tone of the duodenum inhibits the flow of the bile into the duodenum. (b) Any procedure that decreases the tone of the sphincter favors the flow of the bile. (c) Morphine inhibits the flow of the bile, owing to its increasing the tone of the circular muscle of the duodenum, causing sphincter spasm. (d) Magnesium sulphate favors the flow of the bile. (e) In some cases, of cholecystitis or duodenal ulcer, the sphincter may be hypertrophied. (f) In some patients after cholecystectomy the sphincter may possibly undergo hypertrophy.

Treatment of Acute Cholecystitis

The diagnosis of this affection, can be made by the history, the presence of temperature, leucocytosis and local signs. Acute cholecystitis is often amenable to medical treatment, which consists of bed rest, limited fluid intake by mouth and relief of pain. The water balance can be maintained by the parenteral instillation of fluids. Morphine and atropine and spasmalgin should be given in adequate doses, to relieve the pain. Inhalation of amyl nitrite or the oral administration of nitroglycerine will often alleviate the colic. Sulfanilamide has also been tried in these cases. As the patient improves, a high carbohydrate, low fat diet is gradually given. Surgery should be instituted if the patient does not respond to medical measures or if there is evidence of empyemia, gangrene or perforation. The latter, it should be borne in mind, may also occur in acute noncalculous cholecystitis.

The treatment of chronic biliary disease should be classified into the treatment of cholelithiasis, noncalculous cholecystitis and postcholecystectomy sequelæ. Calculi, verified by cholecystography, and accompanied by a history of recurrent colic and cholecystitis, as a rule, require surgery. It is generally conceded that the best results are obtained in those patients with calculous cholecystitis who have had recurrent attacks of pain. If surgery should be necessary a cholecystectomy should be done. A cholecystostomy, however, may be employed in these cases in the aged, or when some contraindication against cholecystectomy exists. If cholelithiasis is found in a routine examination and the symptoms are slight or absent, or if the patient has had only one attack of colic, a difference of opinion exists as to whether medical or surgical treatment should be employed. If the gallbladder concentrates well the patient may go on for years with few or no symptoms. Other criteria which may be employed in these borderline cases, in order to decide whether surgery should be performed, are the macroscopic and microscopic examination of the bile and the glycemic response. Time will not permit a detailed discussion of these subjects, which have been outlined in previous articles (3, 4).

Chronic Noncalculous Cholecystitis

Since the introduction of cholecystography there has been a marked increase in the actual and relative number of cholecystectomies performed. It has been conceded, however, that the surgical results are not so good in the stoneless gallbladder, especially without a history of biliary colic. Therefore, in contrast to the opinion held by many surgeons and internists a few years ago x ray evidence of gallbladder disease, *per se*, does not constitute a surgical indication for cholecystectomy. Apart from operative indications in biliary tract disease, the chief question which confronts the clinician today is what to do with patients who present symptoms referable to the gallbladder and who upon x ray examination are found to have a dilated gallbladder, or one that concentrates poorly, empties slowly, incompletely or not at all, or shows other evidence of malfunction. These have been variously referred to as, pericholecystitis, dyskinesia, or biliary tract stasis.

Clinically, various types of dyskinesia have been described. Carter and his co-workers (5) state that at least three types of dyskinesia can be recognized clinically: 1, hypertonic gallbladder, associated with gastric anacidity; 2, hypertonic gallbladder and sphincter with gastric hyperacidity; 3, hypertonic gallbladder and sphincter with hyperacidity. Other forms of dyskinesia have also been described, as common duct dyskinesia following cholecystectomy; hyperkinetic dyskinesia with paralytic muscular apparatus of Oddi; the socalled toxic, allergic, nervous and endocrine imbalance dyskinesia. I do not think the differences between these various types are, clinically, always as characteristic as we are led to believe from the literature. The important fact to bear in mind is that true biliary colic may be present despite the absence of gallstones. As pointed out before, biliary tract colic may result from spasm of the sphincter, or spasm of the second portion of the duodenum.

The medical treatment of chronic cholecystitis comprises diet, stimulation of bile flow, prevention of spasm and proper elimination.

Diet.—It is clear that no dietary regime will fit all cases and individualization is necessary. A low fat and low cholesterol diet has often been advocated as a routine procedure in these cases. It is not an uncommon experience to see an undernourished individual, with biliary tract disease, literally starving herself because she was placed on a low fat diet. I think this is a mistake. I have followed Einhorn's principle advocated many years ago to allow these patients a liberal diet and not curtail the use of fats unless there is some distinct indication for this procedure. The diet must be regulated to the needs of each patient. If hyperchlorhydria or ulcer complicates the biliary tract disease, the ulcer type of diet will prove beneficial. If a lowered acidity, or achlorhydria should be present this factor must be taken into account. A stimulating diet consisting of fats, meats and fruit juices is best where there is inactivity of the gallbladder. It is, how-

ever, not to be used, in the acute state or where there is a spasm of the sphincter or colic. Here a bland diet low in fats and meats is employed. Attention must naturally be paid to adequate vitamin intake. Frequent feedings are as a rule advisable. Normally the gallbladder acts as a reservoir for stored bile to dole it out after meals for digestive purposes. Likewise, in the chronically inflamed or static gallbladder, this action may be seriously impaired and instead of a free flow of bile after each meal there may be only a constant dribble. Frequent small feedings have the effect of presenting food at a more constant rate to the digestive action of available bile.

Drugs.—The drugs which have been used in the treatment of cholecystic disease may be classified as follows: 1, those which relax the sphincter of the common duct and reduce the irritability of the pylorus and duodenum; 2, those which correct disturbances of gastric sensation; 3, those which stimulate flow of bile (choleretics); 4, those which are intended to sterilize the bile passages. Regarding the drugs of the first group, the studies of Walters (6) have shown that only the nitrites and certain derivatives of theophylline are effective in reducing the sphincter tone and in most of the cases it is advisable to use them daily. Barbiturates plus belladonna or atropine, while not necessarily active, as regards the sphincters, may produce considerable symptomatic relief of cholecystic dyspepsia and may be prescribed together in solution or in capsule form before meals. The newer antispasmodics, syntropan or trasentin, are more useful since they eliminate some of the unpleasant side effects of atropine. Olive oil, which has been in use for years, or cotton-seed oil, now that the former is unobtainable, will also relieve dyspepsia, especially when given before meals, as it has some effect on pylorospasm and favors the evacuation of the gallbladder. Small doses of magnesium sulphate may be given before breakfast because of its known relaxing effects on the sphincter of the bile duct.

In cases where there is an absence of hydrochloric acid in the gastric contents, and hypotonicity of the entire gastrointestinal tract, with flatulent dyspepsia, the giving of dilute hydrochloric acid, fifteen to thirty minims, with meals, diluted in water or fruit juice may be beneficial. Hyperchlorhydria is less common than achlorhydria and when present is often associated with ulcer-like symptoms. Whether or not the presence of an ulcer is demonstrated, the use of alkaline powders will prove most helpful.

The use of bile salts in one form or another has been advised for years. It is known that they have a choleretic effect and increase the total bile flow. They also increase the contents of bile salts and these may have some effect in keeping cholesterol in solution. Various commercial preparations have been used, the most commonly employed being bilron, ketochol and decholin. Bilron is thought to produce an increased flow of bile and also the elimination of biliary elements. Ketochol and decholin act chiefly by increasing the watery fraction of bile, while actually depressing the elimination of bile salts.

The therapeutic advantages of nonsurgical biliary drainage is a disputable subject. I am not going to enter into the pros and cons of this method of treatment. I do wish to state, however, that I have used it and still employ it in conjunction with diathermy or short wave therapy. This subject has been discussed in detail in a previous article (7).

In this country the benefits of spa therapy are believed to be temporary and depend solely upon the rest factor, reduction of weight and change of environment.

The treatment of postcholecystectomy sequelæ comprises a very important and at times a very difficult problem of the treatment of biliary tract disease. The symptoms of biliary colic and various digestive symptoms, which occur after cholecystectomy, may be similar to those the patient experienced before the operation, or there may be an entirely new train of complaints. Before attempting to treat these patients, an attempt should be made to ascertain whether we are dealing with a stone in the common duct, hepatitis, pancreatitis or biliary stasis. Bile studies, especially crystallography, may aid in the diagnosis of a stone in the common duct. Liver function tests, a study of the diastase or the pancreatic ferments, as outlined by Einhorn (9), will also be beneficial. Recently, I have employed gastroscopy to detect cases of gastritis which may account for the symptoms after cholecystectomy. The glycemic response may likewise be used (4). Nonsurgical biliary drainage, in addition to the dietetic and medicinal measures outlined before, are also used in these cases, when indicated. In 1937, this problem was approached from an endocrine viewpoint (4). At that time I used lutein.

Summary

1. The calculous gallbladder is a surgical problem. If associated with acute cholecystitis it should be dealt with preferably after the acute symptoms have subsided, unless there is evidence of spreading infection.

2. The noncalculous gallbladder is primarily a medical problem, and measures which have some physiological background should be employed. Such measures should include:

(a) Frequent feedings of a bland diet, in which the fat content has been adjusted to the needs and tolerance of the patient, rather than routinely eliminated.

(b) Use of drugs and fatty foods which tend to cause relaxation of the sphincter of the common duct, and help evacuation of the gallbladder.

(c) Administration of bile salts, to promote the flow of bile.

(d) Any symptomatic remedies to relieve associated reflex dyspepsia.

3. Despite intelligent medical management symptoms will frequently persist and the physician will in despair turn to the surgeon for aid. In such an event, it is only fair to advise the patient that his chances of cure by surgery are about thirty-three percent, for relief about fifty percent, and return of symptoms about thirty-three percent.

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79 EAST SEVENTY-NINTH STREET

THE USE OF COLLOIDAL CALCIUM GELATINATE* IN SEASONAL ALLERGIES

Preliminary Report

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The methods and remedies employed in the treatment of seasonal allergies seem to be characterized by their variety and numerical magnitude. Few have enjoyed the general acceptance of the medical profession, and even those that are employed with a seeming degree of regularity, are far from being considered satisfactory. This evident dissatisfaction with existing therapy, as experienced in my own personal practice, and also by many of my colleagues, stimulated my further interest in this subject.

It will be recalled that research workers in this field have attempted for many years to develop some satisfactory method of mechanical protection against irritation of the nasal membrane. For example, many will remember the advocacy of chemical cauterization as attained by the application of pure phenol or trichloral acetic acid. Then followed the use of tannic acid spray one percent, and later the electric cautery and zinc ionization therapy. Without exception, all of these methods proved to be unsatisfactory and have been discarded. Yet the theory of mechanical protection of the nasopharyngeal membrane against offending agents remains sound and worthy of further development.

My own experiments, initiated approximately ten years ago, were conducted in the hope of further elucidating the mechanical protective theory. Also, I proceeded on the premise that pollens are partly similar to tannins, and therefore can be rendered inactive and their irritant effect nullified by chemical precipitation. This theory is substantially supported by the fact that when tannic acid in powdered form comes in contact with the nasopharyngeal and corneal membranes, symptoms simulating those of seasonal allergies can be observed. The problem presented was the determination and development of a nontoxic precipitating agent which would also protect the mucous membrane against recurring attacks from offending pollens and tannins.

Early experiments with solutions of calcium hydroxide and gelatin indicated that both of these agents were effective precipitants of tannins. However, a mixture containing both calcium hydroxide and gelatin proved to be a much more effective agent than either a solution of lime water or gelatin alone. Careful laboratory tests also suggested that the effectiveness of such a mixture would vary according to the proportions of each component part employed. This observation resulted in what seemed to be endless experimentation, first laboratory, then clinical, in an effort to determine the correct and most effective therapeutic mixture.

In this work, I was greatly assisted by the advice and suggestions of Dr. H. P. Cady, who at the time the work was done, was chairman of the Department of Chemistry, University of Kansas. It was he who first suggested that the reaction occurring between the calcium hydroxide and gelatin resulted in the formation of what is now known to be calcium gelatinate. In this respect it is worthy of mention that gelatin is a product of animal origin, protein-like in nature, and of variable composition, depending upon its source and method of preparation. Its reaction chemically is that of weak acid and a weak base. Calcium hydroxide, on the other hand, is a strong base (pH 13.5), and reacts with gelatin to form water and calcium salt or salts of the acids of the gelatin. Therefore, it is quite impossible to define or assign a chemical equation to a mixture of the two, for the reason that the reactions between the calcium hydroxide and gelatin are constantly changing.

It should also be noted that, since colloidal calcium gelatinate is presented in aqueous form, it clings closely to the mucous membrane, not only affording protection against irritant substances, such as pollens and other foreign material, but also increases the activity of cilia. This, of course, is quite contrary to the reaction of oil vehicles which inhibit ciliary function, and, in addition, may cause lipoid pneumonia, particularly in infants. For further information pertaining to this subject, the reader is referred to the work of A. Proetz (*Ann. Otol., Rhin. & Laryng.* 43:450, 1934) and an editorial in the *J.A.M.A.* 114:251, 1940.

Clinical Results

My own clinical experience with colloidal calcium gelatinate in the treatment of seasonal allergies has been most gratifying. Results have also been verified by numerous colleagues to whom the solution was referred for clinical observation under varying conditions. Results varied from sixty-five to eight-five percent, and represented complete relief of all types of seasonal allergies or hay fever.

Some patients were under observation and treatment for three consecutive seasons, and these cases afforded a more composite evaluation of clinical results. In practically every instance these patients continued to derive benefit from the therapy; the subjective as well as objective symptoms were markedly lessened in each succeeding year. In all, approximately three hundred patients have been treated during the past seven years. In addition, my own results have been further confirmed by numerous colleagues who extended the clinical experiments to their own practice.

Because of the similarity of irritation of the mucous membrane we have been trying colloidal calcium gelatinate in chronic sinus conditions and the results have been gratifying. As yet, however, it would be unwise to make extensive comment, but I feel that later on I shall be able to present some pleasing statistics relative to results. I do not like to give an opinion on just a few cases, the number of cases at present are not sufficient. I have several friends aiding me in compiling results and I may say they are most happy about results to date.

*Calcium Gelatinate is a product of the Columbus Pharmacal Company, marketed under the trade names of Nazoid (for the nose) and Optoid (for the eye).

Illustrative Cases of Seasonal Coryza

The following cases, selected at random from my files, are typical of the patients treated and results obtained:

CASE I.—C. B., female, aged thirty-eight, seen on July 28, 1939. She gave a history of precipitant attacks of ragweed hay fever starting August 14th. There were no previous symptoms, and no family history of allergy. The diagnosis was acute allergic rhinitis with all the classic signs and symptoms. The eyes were not involved. Laboratory examination showed a large number of eosinophils in the nasal smear. Conclusion: Uncomplicated allergic rhinitis.

Treatment: Colloidal calcium gelatinate was instilled in the nostrils every three hours. Relief was observed in two days after beginning treatment, and the patient was definitely relieved of paroxysmal sneezing by August 13, 1939. Examination at that time indicated no evidence of abnormality in the nose.

CASE II.—D. H. Mc., male, aged twenty-seven, seen on August 27, 1938. He gave a history of acute symptoms of seasonal coryza for the past several years, which usually appeared when ragweed bloomed. The diagnosis was acutely inflamed nasal mucous membranes. The conjunctiva was extremely hyperemic, although other physical findings were essentially negative. The laboratory examination was negative. Conclusion: Hay fever (seasonal coryza).

Treatment: Two or three drops of colloidal calcium gelatinate were instilled in each nostril, and one drop in each eye every three hours. Improvement was noted four hours after the beginning of the treatment. The drops were reduced to three times a day and within two days the patient appeared symptom free. The treatment was terminated in five weeks, and an examination at that time indicated that the mucous membrane of the nasal passages and conjunctivæ of the eyes were apparently normal.

CASE III.—E. C., male, aged forty-eight, seen on August 19, 1939. He gave a history of acute symptoms for the past several years with apparently increasing sensitivity each year. The diagnosis showed that the facial features were greatly distorted due to edema, and that there was complete nasal obstruction due to swelling. The eyelids were thick and swollen and almost completely closed. The patient was suffering from hay asthma and experienced great distress when sitting upright in bed. Laboratory examination of nasal smear before treatment showed many eosinophils with crystal-appearing content. The nasal smear on the second day, or after treatment, showed few or no eosinophils and no abnormal appearance. Conclusion: Hay fever (seasonal coryza) and hay asthma.

Treatment: Three drops of colloidal calcium gelatinate were instilled in each nostril and one drop in each eye every three hours. After twenty-four hours of treatment, the instillation was reduced to three times a day. The asthmatic symptoms disappeared and within four days the patient obtained almost complete relief. The treatment was terminated in five weeks, and an examination at that time indicated an essentially negative mucous membrane and conjunctivæ and a slight chronic postnasal drip.

CASE IV.—W. B., male, aged thirty-two, seen on August 17, 1939. He gave a history of mild nasal and eye symptoms commencing in early spring and lasting until approximately August 15th, when acute symptoms in the nose and eyes and hay asthma developed. The diagnosis was that the patient was very tired, and had not rested for three days and nights because of hay asthma. He had used excessive amounts of ephedrine jellies in the nose, had taken an excess of heavy sedatives, and had used asthmatic proprietary inhalants with no relief. His expression showed excitement and he had difficulty in breathing. Laboratory examination of a nasal smear taken before treatment was begun showed many eosinophils with crystal appearing content. A second nasal smear taken after treatment showed few or no eosinophils and normal cells. Conclusion: Hay fever (seasonal coryza); hay asthma; peculiar neurological manifestations due to overmedication and lack of rest.

Treatment: Three drops of colloidal calcium gelatinate were instilled in each nostril and one drop in each eye every hour for six hours, then every three hours thereafter. Ten hours after the beginning of the treatment the instillations were reduced to three times a day. In four days the asthma was found almost gone, even with a stethoscopic examination, the eyes and nose were greatly improved and the patient was comfortable. The treatment was terminated in seven weeks and an examination at that time indicated a slight nasal obstruction due to congestion in the left turbinate, the mucous membrane and conjunctiva were normal and there were no asthmatic symptoms.

CASE V.—M. E. M., female, aged forty, seen on August 21, 1941. She gave a history of an annual appearance late in June of symptoms of conjunctivitis, photophobia and sneezing, which until this year had not been extremely severe. There was a slight deviation of the nasal septum to the left. The patient was pregnant, and paroxysms of sneezing produced contractions and some spotting. The diagnosis was nasopharyngeal inflammation, swollen eyelids, and a coryza-like appearance of the nose. Examination of the patient was essentially negative except for the laboratory examination of nasal smears. The first smear was loaded with eosinophils full of a crystal-appearing substance. Each succeeding day showed a marked reduction in cells and on the third day none were found. Conclusion: Hay fever (seasonal coryza), complicated with pregnancy and threatened abortion.

Treatment: Colloidal calcium gelatinate was instilled in the nostrils and eyes every three hours. One-half hour after the beginning of the treatment there was a marked response and complete relief was noted within three days after the beginning of the treatment. In this case it was necessary, however, that treatment be used every three hours. There were no contractions of any strength on the second day after treatment and there was no spotting three and one-half days after treatment. The treatment was terminated in late September, following frost and heavy rains.

CASE VI.—G. W. R., male, aged thirty-six, seen on August 10, 1939. He gave a history of a sudden onset of all typical hay fever symptoms after moving into this section from Denver. There was a positive allergic history. The diagnosis was typical findings of an acute allergic state, and the eyes were not especially involved. Laboratory examination showed a nasal smear which was heavily loaded with small clumped eosinophils.

Patch tests revealed a definite sensitization to red top, plantain and ragweed. Conclusion: Allergic nasopharyngitis.

Treatment: Postnasal irrigations with colloidal calcium gelatinate and an instillation of nasal drops of this solution every three hours. One day after the beginning of the treatment there was relief of nasal congestive and irritative symptoms. The treatment was terminated in twenty-one days and an examination at that time indicated the return of the mucous membrane of the nose to a normal condition. There were slight sinus complications due to inadequate drainage.

Method of Treatment

Several factors may very well influence the successful termination of this treatment, and chief among these is the method of application. First, colloidal calcium gelatinate should not be sprayed into the nose, but applied in the form of drops. The patient should be reclining on a table or bed with head well back over the edge. Then place dropper in the upper part of the nose, i.e., toward the forehead, and permit three or four drops of the solution to enter into one side of the nose at a time. If properly administered there usually will be a burning, stinging sensation in the front of the head within a few seconds. When this occurs the patient should sit up and lean as far forward as possible, thus permitting the medication to pass over an entirely different sinus area. However, should this reaction fail to appear it does not necessarily mean that the medication is not effective. Solution should be applied to each nostril two to three times daily. The treatment should also include application of the solution to the corneal and scleral membranes—two to three times daily is sufficient.

Additional factors limiting the effectiveness of this therapy are: (a) head colds, in which instance the solution should not be used; (b) obstructions such as mucous membrane deformity, deviation of septum, overgrowth due to injury, etc. It is suggested that the Proetz method of irrigation be employed where the obstruction is acute. Also, one quarter to one half percent ephedrine in aqueous solution might be employed to hasten the time element in extreme irritations; although, I have never felt the necessity for this as long as the patient cooperated.

Comment

From studying and treating approximately three hundred patients suffering from seasonal allergies, I have gained the following impressions:

1. Colloidal calcium gelatinate is successful in affording complete relief in all types of hay fever to the extent of sixty-five to eighty-five percent. (Percentage increases with experience.)
2. Improvement in most cases is rapid.
3. It is much less difficult to keep the nose open than with the usual ephedrine medication, as the mucous membrane does not tire and then fail to respond to the stimulus as when ephedrine is used. There is also less mucous membrane change without ephedrine than with it.
4. The mucous membrane returns to its normal appearance in most cases in one to two days.
5. Eosinophils, usually taken to mean acute allergic reaction and tissue injury, frequently disappear in the first thirty-six to forty-eight hours, and early vacuolization disappears in the first few hours. Cells that remain appear normal until they completely disappear.
6. The clinical picture of a disturbed, frustrated patient disappears. The patient looks and feels better.
7. Hay asthma is usually completely controlled, followed by relief from irritation.

Summary and Conclusions

1. A new composition of matter (colloidal calcium gelatinate) is presented and demonstrated to be an effective treatment for seasonal allergies.

2. It is suggested that the therapeutic effectiveness of colloidal calcium gelatinate is due to its ability to precipitate offending pollens and tannins, and provide a protective coating over the mucous membrane.

3. The physiochemical mechanism of necessity must be further studied and further scientific examination made in special laboratories and with special equipment. However, clinical observations following the use of colloidal calcium gelatinate have definitely established the safety and therapeutic effectiveness of this therapy, and would seem to justify its use until the various mechanisms involved are better understood.

4. There is no reason to assume that the foregoing treatment would not be successful in the South or any other section of the country, although the experiences were mostly in the Mid-West.

THE BLURRING OF DIABETES

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Diabetes is not a curable disease. It is, however, a treacherous one. Its onset may be sudden. In the face of these facts, there should be full cooperation and understanding between a diabetic and the doctor to whom he has turned for advice. Doctors should give the laboratory reports of their diabetic patients the scrutiny of cautious deliberation. In no other way can they work out a plan by which the victim of the disease can be taught to live with his affliction. Otherwise, the disease will live with him, and when this is the case, havoc will always be imminent.

Not long ago, in *American Mercury*, I came across an article with the strange caption, "I Have Diabetes". It was a human story, well told. Its author gave a clear description of just what it means to be afflicted with this puzzling disease, particularly when, as with himself, it strikes during the years of adolescence. The way he described the self-administration of insulin was classic. He held no mistaken notions as to what would happen to him if insulin was not available. He would die. He knew that without insulin, at his age, diabetes is a merciless killer. Its death rate was one hundred per-

cent. But with insulin widely obtainable, despite his years of adolescence, he has carried on for thirteen years. The disease, he tells his readers, awakened in his mind thoughts that brought him success—a success he would have missed had he escaped the disease.

Despite the many lives insulin has prolonged, generally considered, the death rate of diabetes has increased since the introduction of insulin as a remedial agent. Not that insulin is at fault. It is simply that so many diabetics have come to regard it as a means of making dieting unnecessary, that once again they may, without restraint, indulge the old time fling.

When the average diabetic consults a doctor, his discomfort has been so little that he believes a cure will be easy. But diabetes is not a curable disease. Why? Simply because his pancreas, for one reason or another, is no longer able to furnish what insulin he needs to care for the sugars and starches of his regular diet. This hyposinsulism may be partial or entire. If entire, commercial insulin must be resorted to; if only partial, the thing to be determined is whether there is still enough in the making to care for his actual carbohydrate needs. This is designated as his carbohydrate tolerance. If his carbohydrate tolerance is compatible with health, he will have to keep his intake of starches and sugars within that tolerance.

Unless this regime is strictly adhered to, what is left over becomes an increasing content of the blood until it reaches a certain incidence and the kidneys recognizing it as something foreign throw it out. This incidence is spoken of as the threshold. Low thresholds are more favorable than high ones. Ascertaining the threshold together with determining the carbohydrate tolerance, is the first requisite in obtaining a full and clear understanding of what is to be the course of treatment.

What brings the diabetic to the doctor in the first place? It may be one or more of a number of unusual sensations or inabilities. Loss of sexual power is a common symptom in men. Generally, there are complaints of shifting pains; muscular cramps are not uncommon; an unusual flush, with itchiness of the skin; dimming of vision; a nervousness hitherto unknown; undue thirst; an appetite that is too good.

In the aged, diabetes is not at rapidly fatal as in the young. Not so with the young. It is strange that a disease which is so deadly in strong, resistant youth should be less deadly in enfeebled old age. We carelessly speak of metabolism and cling to theories, but the truth is that we do not know.

Doctors are often at their wits' end with their diabetic patients, for few of them follow their instructions. The doctor who permits these patients to eat indiscriminately is, to them, the real doctor. Little do they realize that such doctors are more dangerous than their disease. And there are diabetics who get it into their heads that a total abstinence from all carbohydrates will bring about a cure. This is a fatal error, for it usually ends in death from coma. But whether he adheres to rules and regulations, whether he lies or is truthful to his doctor, there will be times when self-opinions will cry him down, and he will eat, drink and be merry.

417 WYLLIE STREET

THE INTRAVAGINAL TAMPON IN MENSTRUAL HYGIENE

A Clinical Study

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In view of the increasing use of the intravaginal tampon for the absorption of the menstrual flow, it seemed desirable, if not necessary, that a study of the subject be undertaken to determine whether or not this method of sanitary control is safe and not prejudicial to health. A review of the literature revealed only three relevant contributions: one, by Arnold and Hagele (1) in which the authors stated that some obstruction to the flow occurred when "large" diameter tampons were used during the period of heaviest flow; they also suggested that because "tampons are foreign bodies in the vagina, periodic examination of the vagina should be made to ascertain whether the mucosa remains normal"; the second, by Sackren (2) in direct opposition to these unfavorable views; and the third, by Dickinson (3) in which the use of tampons as menstrual guards is also approved.

Because of these conflicting opinions, the study herein reported was undertaken for the purpose of making personal observation.[1]

Twenty-five women ranging in age from twenty-one to forty-five, parous and nonparous, were selected for this study. They were under daily institutional observation during the catamenial periods. Some of the women had previously used tampons, others had not.

It was decided to limit the investigation to the particular brand of tampon[2] which seemed to be the most popular among female patients consulted. The objective was to determine whether the use of the sanitary tampon had caused any appreciable subjective or objective changes in these women, in the following respects:

1. Whether or not there was any evidence of impediment to the menstrual flow.
2. Whether or not there was any evidence of local irritation following the use of the vaginal tampon during menstruation.
3. Whether or not there was any alteration in the bacterial flora in the vagina and cervix after the use of the tampon as compared with the premenstrual flora.
4. Whether or not there was any alteration in the pH of the vaginal and cervical secretions after the use of the tampon as compared with the premenstrual pH.

Before the tampons were used, each selected subject was examined thoroughly to determine her gynecologi-

[1]The laboratory work was financed by a grant in aid by Tampax, Inc., New Brunswick, N. J.

[2]The brand of tampon used is available in three sizes, super, regular and junior. They are all made of sewed strips of surgical absorbent cotton compressed into cylinders of approximately one-sixth their original volume and contained in a cardboard applicator.

cal status as to the following: 1, whether the perineum was relaxed or firm; 2, whether the cervix was lacerated, infected or eroded; 3, whether the uterus showed any abnormality as to size, position and mobility; and 4, whether the adnexa showed the presence of inflammatory conditions or abnormal organic changes. Reference to table 2 shows that the selected subjects did not present any clinical subjective or objective evidence of marked inflammation or other unusual pathology. They can be considered fairly representative in a gynecological sense of the average nullous and parous woman respectively. The data thus obtained were noted. This clinical examination was followed by a study of the bacterial flora in the vagina and the cervix, by smear and culture, both before and after the use of the tampons during two successive catamenial periods. Bearing in mind the numerous bacterial forms which find their natural habitat in the genital tract (Heurlin mentions thirty-seven varieties, 4), no attempt was made to isolate each and every variety of organism observed. Only the predominant organisms or unusual forms are given in table 2.

At the conclusion of the bacteriological examinations, a second clinical examination was made, similar to the first, to determine whether or not any changes had occurred. By these means it was felt that a reasonably correct evaluation of the effects of the tampon method of sanitary control could be arrived at:

1. As to Local Irritation

Obviously any object, such as a tampon, if it acted as an irritating foreign body in the vagina, particularly during the catamenial period, would necessarily cause a vast increase in the number and variety of the vaginal organisms and a corresponding alteration in the pH of the vaginal and cervical secretions; and in some instances, where a slight or moderate chronic inflammation already existed, subjective and objective symptoms naturally would arise to call attention to the increased irritation. These symptoms, stated briefly, would be a discharge, or an increase in an existing discharge, a change in the pH of the secretions and an itching and burning of the external genitals; in the more severe forms of irritation, these phenomena would be associated with pain and an increased frequency on micturition. Furthermore, if the tampons acted as an impediment to the easy flow of blood, there would be unmistakable subjective phenomena indicative of obstruction, in addition to the "gush" of blood referred to by Arnold and Hagele (1).

It may be stated here that in not a single instance did we observe any evidence of foreign body irritation, clinically or bacteriologically, nor any symptoms that might indicate or suggest that the tampon had in any degree obstructed the free flow of blood.

The bacterial work was done by one of us (J.G.), and the findings are reported, as follows:

Bacteriological Report

Bacteriological examinations consisting of smears and cultures (vaginal and cervical) and smears and cultures of tampons were made in twenty-five cases before and after two successive menstrual periods.

In the early part of this work, several anaerobic cultures were made, to determine the presence or absence of pathogenic anaerobes. None were discovered in any of the cultures.

The organisms found on smear were in the main those usually found in routine examinations, mostly Gram positive and Gram negative bacilli. The cultures showed these same organisms, and most of them were overgrown by staphylococcus albus. A few cultures showed fungi which are occasionally found in vaginal secretions.

It may be concluded from this work that the use of tampons during menstruation had no effect on the bacterial flora, did not materially increase the bacterial flora and did not give rise to the presence of unusual pathogenic organisms.

Table I: Illustrative Case No. I

Mrs. W., white, aged twenty-five years, married five years. She began to menstruate at twelve years. Menstruation was regular, of the twenty-eight, five-day type; flow was moderate. Examination showed perineum firm; cervix long; chronic endometritis; Nabothian cysts; uterus slightly enlarged, small fibroid in left cornua; uterus in anterior position; both adnexa palpable and tender; no pregnancy.

Time and date of gynecological examinations, with findings, are as follows.

June 26, 1939: Following Use of Vulva Pads

pH: Vagina, 5.0; cervix, 7.0.

Smear of vagina: Epithelial cells few; pus little, bacteria few, mostly gram negative cocci.

Smear of cervix: Epithelial cells moderate; pus two plus; bacteria many (four plus); streptococci, gram negative bacilli and cocci.

Vaginal culture: Eight colonies; gram negative cocci and gram negative bacilli and Staphylococcus albus.

Cervix culture: Twelve colonies; gram negative bacilli and cocci; streptococci.

July 12, 1939: Prior to Next Menstrual Period

pH: Vagina, 5.0; cervix, 7.5.

Smear of vagina: Few epithelial; occasional gram positive cocci.

Smear of cervix: Few epithelial; moderate pus; many cocci; few gram negative bacilli.

Vaginal culture: Diffuse growth; Staphylococcus albus; short chain Streptococcus and diplococci (gram positive).

Cervix culture: Twelve colonies: Staphylococcus albus; gram positive diplococci; diptheroids.

July 15, 1939: Beginning Menstrual Flow With Use of Tampons

TAMPON	SMEAR	pH	CULTURE
1	Few epith. and pus cells; gram – bacilli.	5.5	Ninety discrete colonies; Staph.; diphtheroids.
2	Blood and epith.; few gram – bacilli.	7.0	Sparse growth; diphtheroids.
3	Blood, few pus cells; gram + cocci	7.0	Diffuse growth; Staph. albus.
4	Blood, many gram – bacilli; gram + cocci	7.0	Diffuse growth; Staph. albus.
5	Pus and epith.; many gram – bacilli; few gram + cocci.	7.0	Diffuse growth; one fungus colony; Staph.; diphtheroids; Monilia albican.
6	Mucoid material.	7.5	Diffuse growth; Staphylococcus.
7	Few epith. and pus cells; gram – bacilli.	7.5	Gram neg. bacilli; Staph. alb.; diphtheroids.
8	Epith. and pus cells; many gram + cocci; few gram – bacilli.	7.5	Staph. albus; diphtheroids.
9	Gram neg. bacilli; gram + cocci; no cellular elements.	7.0	Diffuse growth; Staph. and diphtheroids.
10	Epithelia; mucoid material.	7.0	Diffuse growth; Staph. albus.

TABLE 2

Case No.	Age	Pregnancies	Gynecological Status on Examination	pH: Before use of tampon		pH: After first menstrual period with tampon		pH: After second menstrual period with tampon		BACTERIAL FLORA BEFORE USE OF TAMPON			
										SMEAR		CULTURE	
				Vagina	Cervix	Vagina	Cervix	Vagina	Cervix	Vagina	Cervix	Vagina	Cervix
1	25	0	Chr. endometritis, uterine fibroid, adnexa palpable	5.0	7.5	4.5	7.0	5.0	7.0	Usual, gram + cocci	Usual, pus 2 +	Few colonies usual bacteria	12 colonies, usual bacteria
2	28	0	Chr. cervicitis, uteroversion adnexa tender, not palpable	5.5	7.5	5.0	6.7	4.5	7.5	Usual	Usual, pus 4 +	Many colonies Staph. alb.	Diffuse growth Staph., diphtheroids
3	41	2	Chr. endocervicitis, uterus enlarged; adnexa not palpable	4.5	7.5	4.0	7.5	4.5	7.5	Few epith, few pus cells, many gram neg. bacilli	Usual, many fusiform bacilli and gram + cocci	Sparse growth diphtheroids and M. catarrhalis	12 colonies, gram - + cocci, Monilia diphtheroids
4	25	0	Retrocessed uterus, chr. endocervicitis, adnexa normal	4.0	7.0	4.5	7.5	5.0	7.5	Moderate pus, epith. few, many gram - bacilli	Pus 4 +, usual	22 colonies, usual	Sparse growth Staph. alb., gram diplococci
5	28	2	Chr. endocervicitis, lacerated cervix, relaxed perineum, uterus flexed ant. left adnexa palpable	4.7	7.5	4.5	7.0	4.5	7.0	Usual, few epithelia, few pus cells	Diffuse growth, Staph. alb., pus 4 +	28 colonies, Staph. alb., one mole, gram + - cocci	Diffuse growth Staph. alb., few colonies gram + - cocci
6	23	1	Mild endocervicitis, small free uterus, rt. adnexa palpable and tender	5.5	7.5	5.5	7.5	5.5	7.5	Normal, few epith., occasional gram - micrococcus	Pus, many diphtheroids and cocci	50 colonies M. catarrhalis and Staph. alb.	36 colonies Staph. alb.
7	21	0	Uterus small retrocessed, adnexa normal, slight endocervicitis	4.5	7.5	5.0	7.0	4.5	7.0	Few epith, gram - cocci	Few pus and blood cells gram + - cocci	150 colonies Staph. alb.	Sparse growth, no colonies
8	23	1	Normal	4.5	7.5	4.5	6.5	4.5	7.0	Few pus cells, many gram + bacilli	Few epith. and pus cells, gram + bacilli	Diff. growth, B. coli, gram - bacilli	6 colonies, gram - bacilli, B. coli
9	40	2	Cervix lacerated, mild cervicitis, relaxed perineum, retrocessed uterus, adnexa not palpable	4.5	7.0	4.5	7.5	4.5	7.0	Epith. and pus, fusiform bacilli, few cocci	Epithelia, few pus cells, gram + bacilli	Diffuse growth Staph.	4 colonies diphtheroids, diffuse growth Staph.
10	28	0	Mild endocervicitis, otherwise normal	4.5	7.5	4.5	7.0	4.5	7.5	Epithelia, gram + bacilli	Pus and epith. cells, gram + - bacilli	Gram + bacilli, few Staph.	Sparse growth Staph.
11	31	0	Chr. endocervicitis anteflexed uterus, adnexa palpable and tender, perineum firm	4.5	6.5	4.5	6.0	4.5	7.0	Epithelia, gram + bacilli	Epith., many, few pus cells, many gram + bacilli	2 colonies Staph. and pneumococcus	Sparse growth diphtheroids
12	41	2	Slight laceration of cervix, uterus normal, rt. adnexa palpable, perineum relaxed	4.5	7.5	4.5	7.0	4.5	7.0	Usual	Usual	12 colonies gram + and vaginal bacilli	10 colonies Staph.
13	26	1	Normal	4.5	7.5	4.5	7.5	4.5	7.5	Usual	Usual, few pus cells	20 col. Staph., one mole	No growth
14	39	1	Slight laceration of cervix, uterus retrocessed, left adnexa palpable and tender	5.0	7.5	4.5	7.0	4.0	7.0	Epithelia, mucus, gram - bacilli	Usual, some pus cells	Diffuse growth diphtheroids and Staph.	Diffuse growth Staph.
15	29	2	Perineum relaxed, uterus retrocessed, adnexa adherent and tender, cervix amputated	4.5	6.0	4.5	4.5	4.5	5.0	Usual	Usual, some pus cells	Diffuse growth Staph.	No growth
16	25	2	Chr. endometritis, adnexa not palpable, uterus normal, perineum firm	4.5	7.0	4.5	7.5	4.5	6.5	Epithelia, pus, gram + diplococci and bacilli	Same	Sparse growth Staph.	No growth
17	26	0	Chr. endocervicitis, uterus anteflexed, adnexa not palpable	5.0	7.5	4.5	7.5	4.5	7.5	Usual	Usual, some pus cells, few cocci	Diffuse growth Staph.	Profuse growth Staph.
18	45	2	Normal; cervical repair evident	4.0	7.0	4.5	7.5	4.5	7.5	Usual	Usual	Profuse growth Staph.	Profuse growth Staph.
19	21	0	Uterus normal, adnexa enlarged and tender, cervicitis (cauterized)	4.5	7.0	4.5	5.0	4.5	5.0	Epith. and pus cells, otherwise usual	Epith. and pus cells, gram + bacilli	Sparse growth gram + bacilli	Sparse growth gram + bacilli
20	35	1	Uterus normal, left adnexa palpable and tender, cervix lacerated, eroded and bleeds	4.5	7.5	4.0	7.0	4.0	7.0	Usual, pus cells, diphtheroids	Usual, pus cells	Diffuse growth Staph.	Sparse growth Staph.
21	34	1	Uterus retrocessed, adnexa not palpable, cervix long and anteflexed	4.0	6.0	4.5	6.0	4.5	6.0	Usual	Usual	Sparse growth Staph.	1 colony Staph.
22	32	0	Uterus slightly large, adnexa palpable and tender, cervix eroded, chr. endometritis	4.0	7.5	4.5	7.5	4.5	7.5	Epithelia, gram + - bacilli	Epithelia, pus, gram + - bacilli and cocci	Fair growth Staph.	Sparse growth gram - bacilli, yeast
23	37	2	Uterus retrocessed; left adnexa tender; cervix long and lacerated, chr. endometritis	4.5	7.5	4.5	7.0	4.5	7.0	Usual	Usual	Sparse growth Staph.	Sparse growth Staph. and gram + bacilli
24	36	2	Uterus slightly retroversed, rt. adnexa palpable, not tender, cervix slightly eroded, chr. endometritis	4.5	7.0	4.5	7.5	4.5	7.5	Usual	Usual, few pus cells	Sparse growth Staph.	Sparse growth Staph.
25	40	3	Uterus retrocessed; adnexa not palpable, cervix lacerated,	4.5	7.5	4.5	7.0	4.5	7.0	Usual	Epithelia pus cells gram + - bacilli	Moderate growth Staph.	2 colonies Staph.

TABLE 2 (Continued)

BACTERIAL FLORA AFTER FIRST MENSTRUAL PERIOD WITH TAMPON				BACTERIAL FLORA AFTER SECOND MENSTRUAL PERIOD WITH TAMPON				Tampon after use (av. for period) pH
SMEAR		CULTURE		SMEAR		CULTURE		
Vagina	Cervix	Vagina	Cervix	Vagina	Cervix	Vagina	Cervix	
change	Usual, pus 2 +	Usual, few diphtheroids	Sparse growth Staph.	Usual	Usual, pus 2 +	Diff. growth Staph.	Diff. growth M. catarrhalis	7.0
al. 4 + epithelia	Usual,pus 4 + gram + cocci	200 colonies Staph. alb., M. catarrhalis, Monilia	Usual, Staph. alb. and diphtheroids	Epith. many, gram – cocci and bacilli	Epith., pus gram – cocci	M. catarrhalis diphtheroids, diffuse growth	Moderate growth diphtheroids M. catarrhalis	6.5
r pus cells m + – cocci	Usual, few cocci	Diff. growth., Staph. alb., Monilia, diphtheroids	Diff. growth. Staph. alb. Monilia albicans	Few gram + bacilli	Few pus cells gram + bacilli	No growth	Mod. growth Staph. alb.	7.5
change	Pus 4 + few gram + bacilli	Diff. growth, Staph., M. catarrhalis	Diff. growth Staph.	Casual	Pus 4 gram + cocci and bac.	Diff. growth Staph.	2 colonies diphtheroids	7.5
change	Few pus cells, blood cells, few gram + cocci	Diffuse growth Staph.	Diffuse growth Staph.	Blood cells, mucus, few gram + cocci	Mod. pus gram + cocci	Diff. growth Staph.	Diff. growth Staph.	6.5
ith , many gram – gram + bacilli	Epith., few pus cells, gram + cocci	Diffuse growth B. coli, 1 mole	15 colonies Staph.	Usual, no change.	Gram + cocci, few pus cells	Diff. growth B. coli	35 colonies Staph. alb.	7.0
large epith., m + – cocci	Few epith., gram + cocci	42 colonies Staph. and diphtheroids, B. coli	6 colonies Staph.	Few pus cells, gram + cocci	Few pus cells gram + cocci	No growth	1 colony Staph. alb.	6.0
change	Few gram + cocci	Staph., B. coli	Staph., gram – bacilli .	Gram + bac., few pus cells	Gram + bacilli pus and epith.	Diff. growth gram – bacilli	Gram – bacilli B. coli	7.0
ith. and few pus ls, gram – dilli gram + ci	Pus, gram – bacilli, gram + cocci	20 colonies Staph.	5 colonies. Staph. and diphtheroids	Epith. few pus cells, gram + bacilli	Pus and epith. cells, gram + bacilli	No growth	1 colony gram + bacilli	6.5
change	No change	14 colonies yeast	70 colonies Staph.	No change	No change	Diff. growth yeast and Staph.	30 colonies, yeast and Staph.	7.0
change	No change	Sparse growth Staph.	Sparse growth gram – bacilli	No change	Few pus cells gram – bacilli	3 colonies Staph. and diphtheroids	No growth	7.5
change	No change	Gram + vaginal bacilli	Staph.	No change	No change	2 colonies Staph.	1 colony Staph.	6.5
change	No change	Diff. growth, diphtheroids	No growth	No change	No change	Mod. growth Staph.	Mod. growth Staph.	7.0
ithelia, gram + vi and cilli	Few red blood cells gram + cocci	Diffuse growth Staph.	Sparse growth Staph.	No change	No change	Sparse growth Staph.	No growth	7.0
change	Some pus and blood cells, epithelia	Diffuse growth Staph.	Diffuse growth Staph.	Epithelia Staph. gram + bacilli	Epithelia gram – cocci	Sparse growth Staph.	No growth	6.5
change	No change	Sparse growth Staph.	Sparse growth Staph.	No change	No change	Sparse growth Staph.	Sparse growth Staph.	6.5
change	No change	Moderate growth Staph.	Sparse growth Staph.	No change	Pus cells no organisms	Profuse growth Staph.	No growth	7.0
change	No change, few pus cells	Few colonies Staph.	No growth	No change, few pus cells	No change	No growth	No growth	7.0
change	No change	Sparse growth Staph.	Sparse growth Staph.	No change	No change	Sparse growth gram + bac. and Staph.	Few colonies Staph.	6.5
oth gram + rilli and cocci	Epith., few pus cells, gram + bacilli and cocci	Profuse growth Staph.	1 colony Staph.	No change	No change	Mod. growth Staph.	slight growth Staph.	7.0
change	No change	6 colonies Staph.	No growth	No change	No change	Sparse growth Staph.	Sparse growth Staph.	7.0
change	No change	Profuse growth Staph.	Profuse growth Staph.	Epithelia pus cells gram + cocci	Epith. gram + bac. and gram + cocci	Profuse growth Staph.	1 colony gram + bacilli	7.0
change	No change	Sparse growth Staph.	No growth	No change	No change	Sparse growth Staph.	Sparse growth Staph.	6.5
change	No change	1 colony Staph.	No growth	No change	No change	2 colonies Staph.	2 colonies Staph.	7.0
change	No change	Profuse growth Staph.	Sparse growth Staph.	Epith. gram + bacilli few	No change	Mod. growth Staph.	2 colonies Staph.	7.0

July 22, 1939: Immediately after Using Tampons

pH: Vagina, 4.5; cervix, 7.0.
Smear of vagina: Few epithelial; mucus; few gram negative bacilli.
Smear of cervix: Many gram positive cocci.
Vaginal culture: Twenty-two colonies; diphtheroids.
Cervix culture: No growth.

August 29, 1939: Prior to Next Menstrual Period

pH: Vagina, 4.5; cervix, 7.5.
Smear of vagina: Many gram plus bacilli.
Smear of cervix: Pus two plus; few cocci.
Vaginal culture: One mold (monilia).
Cervix culture: Sparse growth; staphylococci.

September 10, 1939: Beginning Second Menstrual Flow with Use of Tampons

TAMPON	SMEAR	pH	CULTURE
1	Epith. and pus cells; gram + cocci.	7.5	Diffuse growth; Staph.; gram + diplococci.
2	Few epith.; gram + cocci and bacilli.	7.5	Diffuse growth; Staph. M. catarrhalis.
3	Occasional epith.; few gram + cocci.	7.5	Diffuse growth; Staph.
4	Occasional pus cells; many gram + bac.; few cocci.	7.5	Diffuse growth; Staph.; diphtheroids.
5	Few cells; many gram − cocci and bacilli; few gram + cocci.	7.5	Staph.; M. catarrhalis.
6	Mucus shreds; few gram + cocci.	7.0	Staph.
7	Few pus cells; many gram + bacilli and cocci.	7.0	Staph.; diphtheroids.
8	Few epith.; many gram + and gram − bacilli and cocci.	7.0	Diffuse growth; Staph.
9	Gram + cocci.	6.5	Diffuse growth; Staph.
10	Few shreds of mucus; no bacteria.	6.5	Staph.
11	Occasional gram − cocci; few gram + cocci.	6.5	Staph.; M. catarrhalis.
12	Few epith.; occasional pus cell; gram − bacilli and cocci; gram + cocci.	6.0	M. catarrhalis; Staph.

September 16, 1939: Immediately after Using Tampons

pH: Vagina, 5.0; cervix, 7.0.

Smear of vagina: Epithelial, pus cells; gram negative bacilli; gram positive cocci.

Smear of cervix: Pus; many bacteria; gram negative bacilli and cocci; gram positive cocci.

Vaginal culture: Diffuse growth; staphylococci.

Cervix culture: Diffuse growth; staphylococci; M. catarrhalis.

On September 16, 1939, a gynecological examination following the second use of tampons showed no change.

Owing to limitation of space, we have appended the complete findings of only one case, as they appear in the protocol. Data concerning the twenty-four other cases are given in table 1. Throughout the series, the number of tampons used during a catamenial period ranged from eight to twelve, the average being slightly under ten. Each tampon, immediately after use was placed in a sterile jar and subjected to study by smear and culture for flora and tested for pH.

Inasmuch as tampons were used exclusively during these periods, reference to tables 1 and 2 reveals several important points of interest:

1. A microscopic examination of smears from the vagina and cervix taken immediately after the cessation of menstruation at two successive periods was practically identical with the smears immediately preceding menstruation.

2. Cultures of the bacterial organisms of the vagina and cervix taken immediately after the cessation of menstruation at two successive periods, showed slight or no difference in bacterial flora from the cultures immediately preceding menstruation.

3. The pH of the vagina and cervix taken immediately after the cessation of menstruation at two successive periods differed slightly, within normal limits, or not at all, from the pH immediately preceding menstruation.

In view of these findings, the conclusion is inevitable that the use of vaginal tampons by these women during the catamenia did not cause any appreciable irritation and had no observable injurious effects on the local physical conditions in the vagina and cervix.

2. As to the Free Flow and Absorption

In this series of cases, there was no complaint whatever and no observable evidence that might suggest an obstruction to the free flow of menstrual blood or of any other form of physical discomfort. A few minor difficulties arose, however; in one case it was found that the tampon did not retain its place in the vagina, but slipped out; in another case there was a slight show of blood which had not been absorbed by the tampon. It was found, on investigation in both cases, that a small-sized tampon was being used in an oversized vagina. This was quickly remedied by the substitution of a tampon of larger size, one that was properly correlated with the length and caliber of the vagina. By the same token, it is conceivable that the use of a large tampon in a small vagina may be the source of some discomfort to the wearer; here again, the obvious advantage of the small, medium and large sized tampon of this particular brand is to be noted. With a tampon of proper size, absolute comfort and complete control of the flow can be obtained.

Summary

In a study of the use of intravaginal tampons for the sanitary control of the catamenial flow for two successive periods in twenty-five women under close institutional observation, the following conclusions are submitted:

1. In not a single instance was there any evidence of local irritation brought about by the use of the tampons.

2. No uterine cramps, suggestive of block of the uterine flow or damming back into the tubes were reported in any case of this series.

3. No bladder irritation was reported.

4. The average number of tampons used in a period was ten.

5. In cases in which a cervical erosion was present, neither the amount of bleeding nor the character of the erosion was altered by the use of the tampons.

6. There was no appreciable difference in the bacterial flora of the vagina and cervix, as determined by smear and culture, before menstruation and after the use of the tampons during the menstrual period.

7. There was no appreciable difference in the pH of the vaginal or cervical secretions before menstruation and after the use of the tampons during the period.

8. Absolute comfort and complete absorption of the flow was obtained by the proper correlation of the size of the tampon with the length and caliber of the vagina.

9. The evidence is conclusive that the tampon method of menstrual hygiene is safe, comfortable and not prejudicial to health.

(References appear on p. 323)

News Items

State Hospital Officer.—The appointment of a state hospital officer as an official in Emergency Medical Service has been recommended by the Medical Division for densely populated states in the target areas. The principal function of the hospital officer will be the planning of emergency base hospitals for the reception of civilian casualties and other hospital evacuees.

Red Cross Disaster Relief Squadrons.—Red Cross chapters throughout the United States are organizing disaster relief squadrons, using either privately owned equipment or newly designed mobile units for immediate service in the event of a bombing or disaster of any kind. These squadrons will be equipped with sixteen station wagons, tents, trailers, cots, stretchers and first aid and emergency equipment, and mobile canteens will be available later.

Course in Industrial Hygiene at Harvard.—A course in industrial hygiene was opened at Harvard University School of Public Health, Boston, on April 27th, and will continue until August 1st. This course is open to physicians and engineers who desire training in the field of public health, and covers, among other subjects, sanitary parasitology, ecology, industrial ventilation and air conditioning.

New York Surgical Society.—The last meeting until fall of the New York Surgical Society was held on Wednesday, May 13th. Dr. Hayes E. Martin and Dr. Edgar L. Frazell presented a paper on the Surgery of Parotid Tumors and Dr. Martin presented illustrative cases. Dr. Edward W. Peterson read a paper on Tumors of the Neck, with Special Reference to Congenital Cysts and Fistulæ and presented cases illustrating the paper.

Protection of Hospitals.—Bulletin No. 3 of the Medical Division of the Office of Civilian Defense is entitled "Protection of Hospitals." The bulletin discusses protection of hospitals against air raids under the following heads: Protection of building fabric; patients and personnel; protection of glass; ventilation; protection against fire; rescue squads; air raid shelters; blackout regulations; protection of utilities; facilities for care of casualties; unit system and reserve stocks; the ambulance entrance; morals; distribution of casualties to wards. The bulletin was prepared in collaboration with a special committee of the American Hospital Association.

Exhibit of Physician's Art Association.—The fifth annual exhibit of the American Physician's Art Association will be held at Atlantic City, N. J., June 8th to 12th. Dr. Francis H. Redewill, secretary of the association, has sent entry blanks to members, giving details regarding the kind of art pieces that will be exhibited and how to send them. The type of art to be exhibited includes personal work of the following types of medium: oil portraits, oil still life, landscapes, sculpture, water color, pastels, etchings, photography, wood carving, leather tooling, ceramics and tapestries. All exhibits should be sent preferably by railway express collect. Through the courtesy of Mead Johnson and Company, Evansville, Ind., there will be no fees for hanging and express charges will be waived.

Round Table Discussion on Analgesia and Anesthesia.—A round table discussion on the interrelationship between analgesia and anesthesia was held at the New York Polyclinic Medical School and Hospital, on April 14th.

Graduate Week in Medical History.—The third graduate week in medical history was held at the Institute of the History of Medicine, Johns Hopkins University School of Medicine, Baltimore, on April 27th to May 2d. The general subject of the course was Contributions of Greece and Rome to Medicine and consisted of lectures, seminars, demonstrations, exhibits and discussions. Dr. Henry E. Sigerist, William H. Welch professor of the history of medicine, delivered the opening address.

Scientists Wanted for the Sanitary Corps of the Army.—Announcement is made by the Surgeon General, United States Army, that there are vacancies in the Sanitary Corps for bacteriologists, biological chemists, sanitary engineers and entomologists. Full details concerning the qualifications of applicants for commissions in the Sanitary Corps may be obtained upon application to the Surgeon General's Office, U. S. Army, Washington, D. C.

Faculty Changes at Harvard Medical School.—Dr. John H. Mueller, associate professor of bacteriology and immunology, has been named professor of bacteriology and immunology, the appointment to take effect on July 1st. He will also take charge of the department at the Medical School and at the School of Hygiene and Public Health. The following promotions to associate professorships have also been announced: Dr. Fuller Albright, medicine; Dr. Allan M. Butler, pediatrics, and Dr. Hiram H. Merritt, neurology. Dr. Frederick J. Stare has been appointed assistant professor of nutrition.

Commissions for Women Physicians.—A resolution asking that qualified women physicians be commissioned in the Medical Reserve Corps of the Army and Navy was presented by Dr. Emily Dunning Barringer, of New York, at the annual meeting of the Medical Society of the State of New York, held during the week of April 27th. In presenting the resolution, Dr. Barringer said that although women doctors could not obtain commissions in the American forces, two American women physicians had received commissions in the Royal Army Medical Corps of the British Army and had been assigned to military hospitals. The resolution was adopted by the Society and will be presented to the American Medical Association.

Yale Graduates Register for Duty with Armed Forces.—Dr. Francis G. Blake, dean of Yale School of Medicine, has announced that the fifty-one members of the graduating class—the first wartime doctors who will be awarded degrees from Yale—have received internship appointments at hospitals in fifteen states. The majority of these graduating students are already registered for military or naval service and expect to be on active duty with the armed forces after completing the one year of internship allowed by the Army and Navy. Beginning June 29th, the Yale School of Medicine will embark on an accelerated year round program. The enrollment of the entering class has been increased by twenty percent to meet the war emergency, and at least sixty students will be admitted in June instead of the customary fifty.

Physicians Needed for the Medical Department of the Army.—An official announcement from the Procurement and Assignment Service states that sixteen thousand physicians are needed by the Army, five thousand immediately and eleven thousand by the end of this year. Enrollment forms and questionnaires are being sent to all licensed physicians in the United States with the request that they be returned at once. It is believed that from this first call a suitable number of physicians will be secured to meet the demands of the armed forces without too great dislocation of civilian needs. Dr. Frank H. Lahey, of Boston, president of the American Medical Association, is chairman of the directing board of the Service.

New Officers of State Society.—At the one hundred and thirty-sixth annual meeting of the Medical Society of the State of New York, held in New York, April 27th to 30th, Dr. George W. Cottis, of Jamestown, was inducted as president, succeeding Colonel Samuel J. Kopetzky, and Dr. Thomas A. McGoldrick, of Brooklyn, was named president-elect to take office in 1943. Other officers elected included: Dr. Peter J. Di Natale, of Batavia, second vice-president; Dr. Peter Irving, of New York, secretary; Dr. Edward C. Podvin, of New York, assistant secretary; Dr. Kirby Dwight, of New York, treasurer.

Blood and Plasma Banks.—Regulations for the administration of the blood and plasma bank program of the Medical Division of the United States Office of Civilian Defense have now been prescribed, and funds are available for grants to assist approved hospitals in establishing blood and plasma banks. Only hospitals within three hundred miles of the Atlantic, Pacific or Gulf coasts are eligible for such grants. After July 1, 1942, these geographical restrictions may be modified, so that grants may be made to inland hospitals. Applications should be addressed to the Chief Medical Officer, United States Office of Civilian Defense, Washington, D. C.

Obstetrics and Gynecology Examination.—The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted at Atlantic City, N. J., by the entire Board, from Thursday, June 4th, through Tuesday, June 9, 1942, prior to the opening of the annual meeting of the American Medical Association. Group A, Part II, candidates will be scheduled for examination the first part of the period, and Group B, Part II, the latter half.

Graduate Fortnight at the Academy.—The fifteenth graduate fortnight of the New York Academy of Medicine will be held October 12th to 23rd, 1942. The subject selected for consideration is "Disorders of the Nervous System" and the program will include morning panel discussions, afternoon clinics, evening lectures, scientific exhibits and demonstrations. Morning panel discussions will be held on Tuesday and Friday of each week and afternoon clinics will be held in the leading hospitals of the city. At the evening meetings lectures will be delivered by leaders in the field of neuropsychiatry, and there will be a comprehensive exhibit of research, roentgenographic and pathological material which will include diagnosis and treatment, clinical and laboratory diagnostic methods, action of drugs and fresh pathology demonstrations. In the library of the Academy there will be an exhibit of books illustrating the subject of neuropsychiatry.

Personal.—Dr. Thomas B. McKneely, Passed Assistant Surgeon in the U. S. Public Health Service, has been assigned to the Medical Division, Office of Civilian Defense, by the Surgeon General of the U. S. Public Health Service to assist in the organization of emergency medical services throughout the United States.

Dr. Donald B. Armstrong, third vice-president of the Metropolitan Life Insurance Company, in charge of welfare services for policy holders, has been appointed a Senior Surgeon in the Reserve Corps of the United States Public Health Service, a title equivalent to that of Lieutenant Colonel in Army ranking.

Dr. Burt A. Dyar, regional medical officer for the Farm Security Administration, with headquarters in Indianapolis since September, 1939, has been appointed Regional Medical Officer for the Fourth Civilian Defense Region. His headquarters are in Atlanta.

Dr. Judson D. Dowling, recently Regional Medical Officer in the Fourth Region, has been assigned to the States Relations Division, U. S. Public Health Service.

Dr. Wallace D. Hunt, Regional Medical Officer for the Ninth Civilian Defense Region, with headquarters in San Francisco, has been transferred to Omaha, Nebraska, as Regional Medical Officer of the Seventh Region. Dr. Leonard A. Scheele of the headquarters staff in Washington is acting Regional Officer in the Ninth Region.

Dr. James M. Mackintosh, professor of public health at the University of Glasgow, has returned to Scotland after spending several months in the United States as the guest of the Rockefeller Foundation. Dr. Mackintosh, who was chief medical officer of the Department of Health for Scotland, from 1937 to 1941, acted as consultant to the Medical Division of the Office of Civilian Defense, Washington, D. C., and in that capacity visited many parts of the United States, lecturing and advising on Emergency Medical Service for Civilian Defense.

Dr. Julius B. Abels, of Baltimore, has been awarded a one-year fellowship by the Finney-Howell Research Foundation to work at Memorial Hospital for the Treatment of Cancer and Allied Diseases.

Dr. Stuart W. Harrington, professor of surgery, University of Minnesota Graduate School, Minneapolis, delivered the fifth annual Hedblom Memorial Lecture at the University of Illinois College of Medicine, on April 29th. His subject was the Diagnosis and Surgical Treatment of Intrathoracic Tumors.

Dr. Carl V. Reynolds, Raleigh, N. C., was elected president of the State Territorial and Provincial Health Authorities of North America at a recent annual meeting held in Washington, D. C., succeeding Dr. Frederick W. Jackson, of Winnipeg, Canada.

Dr. Henry W. Cave has been appointed chairman of the Procurement and Assignment Service in New York City to succeed Colonel Samuel J. Kopetzky, who has resigned from this service.

Dr. Marston T. Bogert, emeritus professor of organic chemistry at Columbia University, has been made an honorary member of the Society of Chemical Industry of England.

Dr. Ralph G. Meader, assistant professor of anatomy at Yale University School of Medicine, has been appointed assistant to the director of the Jane Coffin Childs Memorial Fund for Medical Research.

American Society for Pharmacology and Experimental Therapeutics.—At the annual meeting held in Boston, March 31st to April 4th, under the presidency of Dr. E. M. K. Geiling, of Chicago, the following officers were elected: President, Dr. E. K. Marshall, Jr., the Johns Hopkins University; vice-president, Dr. Carl A. Dragstedt, Northwestern University; secretary, Dr. Raymond N. Bieter, University of Minnesota; treasurer, Dr. Edwin E. Nelson, Tulane University; councillors, Dr. McKeen Cattell, Cornell University; Dr. Ralph G. Smith, University of Michigan.

Massachusetts Medical Society.—The one hundred and sixty-first annual meeting of the Massachusetts Medical Society will be held in Boston, May 25th, 26th and 27th, with headquarters at the Hotel Statler. The annual oration will be delivered on Tuesday morning, May 26th, by Dr. William B. Castle, professor of medicine, Harvard Medical School, his subject being, "Some Remarks on Medical Therapy." The annual dinner will be held on Tuesday evening and the guest speakers will be Dr. Frank H. Lahey and Dr. Morris Fishbein. Following the dinner, Dr. John F. Fulton, Sterling professor of physiology, Yale School of Medicine, will deliver the Shattuck Lecture, his subject being, "Medicine and Air Supremacy." An excellent program of papers has been arranged with the medical problems of wartime as a distinctive feature. Dr. Frank B. Ober is the retiring president and Dr. George L. Schadt, president-elect. Dr. William T. O'Halloran is chairman of the Committee of Arrangements.

Faculty Promotions at Columbia.—The promotion of forty-three members of the Columbia University faculty has been announced. These promotions include the following: Dr. W. Duncan Strong, associate professor of anthropology, promoted to full professorship; Dr. Vernon W. Lippard, assistant dean of the School of Medicine, was named associate dean; Dr. Alvan L. Barach, of the department of clinical medicine, Dr. Donovan J. McCune, department of pediatrics, Dr. Karl Meyer, department of biochemistry, Dr. Arthur W. Pollister, zoology department, and Dr. David Seegal, of the Welfare Hospital, Welfare Island, all were advanced to associate professorships. Dr. Halford Hallock and Dr. Leonidas Lantzounis were named associate clinical professors of orthopedic surgery. The following were made assistant professors: Dr. Fred S. Keller, psychology; Dr. Jerome M. B. Kellogg, physics; Dr. Ruth A. Miller, anatomy; Dr. Edith E. Sproul, pathology, and Dr. Raymond C. Truex. The following have been made assistant clinical professors: Dr. Samuel C. Burchell, neurology; Dr. L. Beverley Chaney, neurology; Dr. Armistead C. Crump, medicine; Dr. Augus M. Frantz, neurology; Dr. Hugh S. McKeown, ophthalmology.

Intravaginal Tampon in Menstrual Hygiene

(*Continued from page* 320)

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3. Dickinson, R. L.: *Control of Conception.* Second edition, p. 172, 1938.
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Book Reviews

Surgery

A Textbook of Surgery. By American Authors. Edited by Frederick Christopher, B.S., M.D., F.A.C.S., associate professor of surgery, Northwestern University Medical School. With 1538 illustrations on 771 figures. Third edition, revised and reset. Philadelphia and London: W. B. Saunders Company, 1942. Pp. 1764. Price $10.00.

During past years, five contributors to previous editions of this monumental work, namely, Drs. Campbell, Gatewood, Sonnenschein, Andrews and Lewis, have passed on. Therefore, the chapters written by these men have been rewritten and brought up to date. Other sections concerning the thymus and spleen have also been revised, and scarcely a page remains unchanged.

Pages 131 to 139 deal with war injuries, and, therefore, hold great interest for all of us at this time. Dr. Robert I. Harris, of the University of Toronto, has written them. Injuries are due to bullets, shells, bombs, air blasts (affecting lungs and brain), material blasts (buildings, etc.), crushings (falling walls), bone fractures, burns, and gas. The problems still facing the surgeon are those of shock, toxemia, secondary shock, sepsis, and terminal events of various kinds. Of burns, Harris says that if twenty percent of the body surface is involved, the mortality is likely to be fifty percent. If fifty percent of the body surface is destroyed, the mortality is usually one hundred percent.

The sulfa remedies are now of great help in combatting toxemia. All "dead" skin must be cut away, sulfanilamide applied, and as soon as the surface is surgically clean, grafts must be placed. Tannic acid is still useful, but may shrink and cut off blood supply when the "tan" thickens. This author mentions "Aldrich dye" as a surfacer. It is composed of a violet and a green dye, plus acriflavine. Morphine, immobilization, fixation, transfusions, the "blood bank", and good nursing are all indispensable. From the reports of surgeons at Pearl Harbor, all of these measures were highly successful and decidedly heartening at a time when heartrending experiences are constant in the day's work. Every surgeon called to duty at this time may well pack this book with his belongings. He is surely going to refer to it frequently.

The Charaka Club

The Proceedings of the Charaka Club. Volume X. Baltimore: Published for the club by the Williams and Wilkins Company, 1941. Pp. 260. Price $5.00.

The Charaka Club is composed of an esoteric group of physicians living in or near the City of New York, a sort of medical intelligentsia, who enjoy each other's cultural pastimes in meeting assembled, somewhat after the famous Physicians' Club of Philadelphia. Its members are all of professional standing, men of parts, grounded in the fine art of living, and who, therefore, have something to impart to art, literature, or music. Deceased members were Osler, Cushing, Abbe, Brewer, Peterson, Tilney, George D. Stewart *et al.* In this volume, the late Samuel Lambert writes of "The Morgue" and "The Mystery of Robert Seymour" who was the artist who helped to illustrate Dickens' *Pickwick Papers.* Dr. Walter Steiner relates "The Story of Barbara Fritchie". Edward L. Keyes has things to say

about "Love and Lues", and Rufus Cole describes "The English Garden". There is, therefore, literally something for everybody in the varied themes, and the unusual treatment of these variations. Walter Mendelson sets down, for example, "Person Recollections of Henry George", and Fred B. Lund investigates "The Medical Notions of a Roman Gentleman in the Second Century A. D." What greater contrast could there be? And throughout the 260 pages of large type set on paper of excellent quality we find entertainment, diversion, and nuggets of wisdom culled from wide human experience.

One may feel sure that the meetings of the Charaka Club are lively and packed full of good stories which are not only well told, but quite in the best literary vein common to men of genius who are accustomed to think clearly on matters of all kinds, be they trivial or philosophic.

Medical Milestones

Thomas Dimsdale and Smallpox in Russia The smallpox epidemic that ravaged Europe toward the close of the eighteenth century took its greatest toll in Russia. It was estimated that approximately two million persons died from the disease in one year. The ruler of Russia at that time was the Empress Catherine the Great, who, for her times, was a most progressive sovereign. The story goes that it was through her and her great friend, Voltaire, that the practice of inoculation was introduced into the country in an effort to control smallpox. Other authorities claim that Catherine's first reference to the disease to Voltaire is in a letter in which she tells him that she has been inoculated.

Probably the best known authority on smallpox in the world at that time was Thomas Dimsdale, an English physician of Hertford. He came of an old Quaker family with a long line of doctors. Young Thomas was educated by his father, later studying under Joshua Symonds and John Girle at St. Thomas' Hospital. For a time he gave his services without pay as an army surgeon; at this time he was not a member of the Society of Friends. He received his degree in medicine in 1761 from King's College, Aberdeen.

For a number of years Dimsdale had been interested in inoculation for smallpox. In 1767 he published a small book entitled *The Present Method of Inoculating for the Small-Pox,* dedicated to the Royal College of Physicians of London. His method of inoculation comprised the following measures. For nine or ten days before the operation his patients were enjoined to abstain from meat, fermented liquors, and to live on a low diet. During this time they were to take three doses of a "preparative" powder composed of eight grains of calomel, eight grains of powder of crabs' claws, and one eighth of a grain of tartar emetic at bedtime, and a dose of salts on each succeeding morning. The matter for inoculation was taken from another recently inoculated person at the point of insertion, of from a ripe pustule if "in the natural way." Dimsdale describes the final step thus: "An incision is made in that part of the arm where issues are usually placed, deep enough to pass through the scarf skin, and just to touch the skin itself, and in length as short as possible, not more than one eighth of an inch. The little wound, being then stretched open between the fingers and thumb of the operator, the incision is moistened with the matter, by gently touching it with the flat side of an infected lancet. This operation is generally performed in both arms, and sometimes in two places in one arm, a little distant from each other. . . Neither plaister, bandage, or covering is applied, or in any respect necessary . . ."

In his book Dimsdale reported at length twenty-two cases of inoculation, and seven cases of natural smallpox treated by this new method. Seven English editions of the volume were published, and it was translated into several languages. Dimsdale's reputation as an inoculator was established; people of all classes gathered at Hertford to receive his treatment.

Catherine of Russia The reason why the Empress of Russia decided to undergo the operation of inoculation is thus described by Dimsdale: "A young lady, daughter to a nobleman of distinguished quality and fortune, extremely beautiful in her person, and not less amiable for the accomplishments of her mind, was contracted to a nobleman of the highest rank and station in the Russian Court. A few days before the time appointed for the nuptials, she was unfortunately seized with the small-pox, which, proving a malignant kind, soon terminated in a loss that was universally lamented."

This sad event convinced the Empress of the danger to herself and also to her son—both had been exposed to the disease—and she at once decided to summon to the Court the greatest authority on treatment and prevention of the dreaded disease—Thomas Dimsdale. The Russian monarchs had always shown a strong preference for English doctors; ever since 1557 all their court physicians had been British. Dimsdale was summoned to proceed to St. Petersburg to attend the Empress through the Russian ambassador in London.

At first this rather sudden and forceful invitation did not appeal to the worthy doctor; he was fifty-six years old, had a fine practice and an established reputation, had amassed a large fortune, and he considered the journey to be eminently more suitable for a younger man. While he was trying to find a substitute to suggest, he received a second, still more forceful invitation, telling him that the journey would be by no means long nor difficult, a friend of the Empress having recently completed it in "only sixteen days." Remuneration was left for him to name, and the invitation contained an order for one thousand pounds sterling for travelling expenses. It was suggested that he choose a travelling companion. Who could refuse such generous and considerate terms? Dimsdale accepted them, and set out for the Russian capital with his son, a medical student at Edinburgh. They reached St. Petersburg in exactly one month to the day!

Here they found ready for their occupancy a magnificent apartment on Millionaire Avenue, with a staff of servants, a handsome carriage and pair, and everything else anyone could wish for. On the next day Dimsdale dined with Catherine and twelve of the Court, and expressed himself as greatly impressed by the "understanding and politeness of her Majesty, her extreme penetration, and the propriety of the ques-

tions she asked, relative to the practice and success of inoculation." Later he wrote to a friend, "She is of all that I ever saw of her sex the most engaging. She has a way of pleasing, without appearing to have an art."

When the time came for the introduction of inoculation into the Empire, a large palace was purchased by the Empress and converted into a hospital. Dimsdale was commanded to draw up a description of his methods, and this was published and distributed throughout the country. When Her Majesty was inoculated, the operation was done at night in great secrecy, and relays of coaches and horses were kept in readiness so that, if anything went wrong, Dimsdale could get away before an aroused populace might take it into their heads to make trouble. But, fortunately for all concerned, the operation was very successful, as was that of the Grand Duke Paul, performed later. Dimsdale became the idol of the court and royal family, and was wined and dined, ad infinitum. It became a fad to be inoculated, and people swarmed to the hospital to offer themselves for the operation.

Dimsdale instructed other physicians in his methods, and, before a year had elapsed, the great smallpox epidemic in Russia had been checked. "It was unfortunate," writes a biographer, "that all his energies were directed to the study and advocacy of a practice that was so soon to be discredited. The publication of Jenner's *Inquiry* two years before Dimsdale's death gave the death blow to the practice of inoculation."

Medicoliterary Notes

Spencer Brade, M.D. is the title of a very readable novel by Dr. Frank G. Slaughter recently published by Doubleday, Doran. The plot holds the reader's attention, and, besides, the author reveals certain sides of medical practice not usually known by the layman. The theme of the novel is the career of one of those doctors, all too common, who play up to the wealthy by maintenance of a "clinic" supported by figures never less than in the thousands. The contrast is vividly drawn between this type of practitioner and the serious, hard-working, sincere individual who, often through sacrifice and rare courage, always tries to give to his patients the very best of himself and of the science of medicine.

* * *

Henrietta Szold, who at the age of eighty-one is probably the dominant personality in Palestine, has reversed the normal course of life. Most people who are pioneers and adventurers in their youth, at middle age begin to retire into a world of contemplation and reverie. Miss Szold was a scholar in her youth; her career of action began when she was nearly fifty. During the last three decades she has been the spearhead of Zionism. She founded *Hadassah,* organized Palestine's medical and sanitary service, gave direction to its educational system, and threw herself into the terrible struggle to settle the Arab-Jewish conflicts. Most recently she created the Youth Aliyah which has saved thousands of Jewish children from the Nazis. *Henrietta Szold: Life and Letters,* recently published by the Viking Press, begins with an early memory of herself as a little girl sitting on the floor of the parlor of her parents' house in Baltimore, helping the grown-ups make bandages for the soldiers fighting the American Civil War. The volume of her letters is filled with comments on the events, great or small, that have amused or touched her, angered her, or moved her to thanksgiving. Marvin Lowenthal, who was given access to the letters by the Szold family in America, has drawn the various sections together with narrative passages of his own. It is his hope that through it "the public at large will come to know a woman who is already loved and honored by thousands."

* * *

The soybean, which is older than the Pyramids, has become one of the modern miracles. There doesn't seem to be anything it can't do. It's used for flour, milk, margarine, vegetable shortening, salad dressing, cheese, cereals, wafers, paints, adhesives, paper coating, synthetic wool, baking enamels, varnishes, leather coating, rubber substitutes, lubricating greases, soaps, insecticides, glycerine, plastics, and oils. In fact, it has become so important to America's war effort that the New York City League of Women Voters is educating housewives on its uses as a food. *Soybeans: Gold from the soil,* by Jerome Dies, tells the story of soybeans including how to grow them. The publishers are the Macmillan Company.

* * *

Now that the golf ball has fallen victim to the war effort, we predict that many a man who spent his spring and summer week-ends replacing divots on the golf course will now spend those week-ends spading up his front lawn and growing some of his family's food. Among a number of aids to effort along this line is *The Food Garden* by Laurence and Edna Blair, a book that not only tells but shows in drawings how to turn a moth-eaten lawn into a flourishing farm. This book is also a publication of Macmillan's. Another timely garden book published by the same firm is *Herbs: Their Culture and Uses,* by Rosetta E. Clarkson. The book is a comprehensive story of the raising and use of herbs, and includes recipes for everything from herb canapes to herb teas.

* * *

A tonic as well as good entertainment for at least a couple of evenings will be found by those who wish it in Sylvia Brockway's delightful book, *Respectfully yours, Annie.* Annie is a cook, the ideal British servant, who voluntarily wishes to stay in London and take care of the house and Mr. B. while "Madam" (Mrs. Brockway) and the two children are away in the United States. The letters keep "Madam" informed about the goings on in London. "We had a sweet little blitz last night," writes Annie, "since when I have not quite dared take off my corsets, uncomfortable as it is to try to sleep with them." With her two "babies" gone to America, Annie transfers her care and affection to the family's animals, the over-size Sealyham, and Budge and Nigger, the two cats. Mr. B., who is an air raid warden, comes in for very special care on Annie's part, including detailed accounts to his wife of all his activities, the friends he entertains at the house, and very lively birthday parties, with candles, "snappers" and other forms of jollification. The book is unique in its humor and as a revelation of the real Britisher at home and liking it, in spite of Herr Hitler's attentions.

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Medicolegal Notes

Proof of Disablement by Silicosis in Compensation Cases

In determining whether an employee has silicosis causing disablement compensable under the Illinois Workmen's Occupational Diseases Act, the Illinois Supreme Court is of opinion that "the Industrial Commission should consider the occupational history of the patient, his physical condition, the x ray readings, the opinions of the medical experts and other competent evidence which tends to prove or disprove a disablement caused by silicosis. Expert medical testimony is legal and competent evidence and should be received, treated and weighed precisely as other evidence. The character of the expert, his professional capacity, skill and opportunity for observation are proper factors to be considered in determining the weight to be accorded his testimony. Where expert witnesses disagree, the court cannot undertake to determine with technical accuracy where the preponderance of the evidence lies." That is the province of the Industrial Commission, whose decision on a finding of fact will not be set aside unless it is manifestly against the weight of the evidence. J. I. Case Co. vs. Industrial Commission, 378 Ill. 132, 37 N. E. 2d 821.

False Representations as to Medical Attendances

An application for life insurance and the medical examiner's report, both attached to and made part of the policy subsequently issued, contained representations that the insured had not received medical attention within the past five years and that he had never had syphilis. In an action on the policy the evidence showed that the insured had been suffering to this knowledge within two years before making the application from and had had medical attention for syphilis. The Georgia Court of Appeals, Barkers Health and Life Ins. Co. vs. Glisson, 7 S. E. 2d 32, held that these representations were material, precluding recovery on the policy as being false and fraudulent and the facts being unknown to the insurer. The evidence excluding every reasonable inference, except that the misrepresentations were material, no issue was presented for determination by the jury, and recovery on the policy was precluded.

Hospital Liens for Services

The Washington statute of 1937 giving hospitals a lien on any claim or right of action for traumatic injuries for services rendered to the claimant, did not operate retroactively, so as to give a hospital a lien for services rendered prior to the effective date of the statute. But two x rays taken in October and November, 1937, subsequent to that date came within the statute and the lien was sustained to that extent. The court followed the universally accepted rule that retroactive legislation is looked upon with disfavor, and that statutes will be construed to be effective in future only unless a contrary intent appears. Layton vs. Home Indemnity Co., Wash. Supreme Court, 113 P. 2d 538.

Disability Due "In Part" to Disease

An accident and health policy provision limited indemnity to one month in any one year for disability due "wholly or in part, directly or indirectly" to any chronic disease. The insured suffered a severe attack of pain, caused by impacted gallstones and consequent inflammation of the gallbladder. Two operations were performed, one to remove the gallstones, the second to remove the gallbladder.

The insured sued for health benefits. The testimony of one of defendant's witnesses was to the effect that the presence of gallstones always indicates a chronic condition or disease of the gallbladder. This view was accepted by the trial court, which found for plaintiff. The New Hampshire Supreme Court, Serafino vs. Boston Casualty Co., 24 A. 2d 279, held that the plaintiff's disability was due "in part" at least to chronic disease, so that recovery was limited to indemnity for only one month in any one year. The jury's verdict was accordingly reduced to that extent.

Materiality of Life Insurance Application Questionnaire

The New Jersey Court of Errors and Appeals holds, Urback vs. Metropolitan Life Ins. Co., 23 A. 2d 568, that when a life insurance company is asked to underwrite a death risk, and the usual preliminary questionnaire is to be answered by the applicant, the prior medical history of the applicant and the true statement thereof are matters essentially material to the risk involved, and the immateriality of such matters is not a question for the jury.